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OHIO STATE  
UNIVERSITY  
MINUTES

OF THE

OHIO STATE

Archæological Convention,

HELD IN

Mansfield, O., Sept. 1st & 2d, 1875.

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COLUMBUS:

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1875.



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## Call for the Convention.

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MANSFIELD, OHIO, AUG. 5, 1875.

DEAR SIR :

The undersigned, aware of the facts that Ohio presents one of the richest fields for the study of Archæology, as embraced especially in the relics of a race anterior and more cultivated than that found here during the eighteenth and nineteenth centuries; that while in almost every county there are one or more persons who have studied the subject and collected some relics, there has been no well organized system pursued, and no combined effort made to elicit the truth, and settle inquiring minds upon a well sustained theory of who they were, or when or how long they inhabited the country we now occupy. These relics are becoming yearly more interesting by discoveries of objects left by them, which have never been combined, and are being lost or destroyed.

In other parts of the world great expense and labor is being offered to similar investigations. In some of our sister States have been formed associations, and they are collecting fine cabinets of these relics for the instruction of their people, and the admiration of those who come after us. With these views, and with the purpose of forming a State Society, in which all interested in the subject can work harmoniously and effectively, we invite you to attend a convention for organizing such a society to be held at Mansfield, on Wednesday, the 1st day of September, at 10 o'clock A. M. The railroad communication with all parts of the State is very complete, and the hospitality of the city has been tested, so that we think we can insure free entertainment to all who will give notice of their intention to visit it, by note to Gen. R. Brinkerhoff or Col. J. E. Wharton. Address-ees are expected upon Archæology, Ethnology and kindred topics



from some of the most eminent men of the country. All who take an interest in the subject are invited to bring with them such relics as they may have, or be able to procure, for examination and classification; and if they choose to deposit them in Mansfield, where there are fire-proof rooms, free of expense, they can do so. This will make a nucleus until the association can select its location and erect its own buildings.

Please invite such persons of your acquaintance as you know to be interested in the subject; also inform us by letter or postal card of your or their intention to be here. Report on arrival at the Library, in the Court House.

Respectfully, Yours,

D. H. MOORE, Prest. Wes. Col., Cincinnati.  
 A. A. WRIGHT, Prof. Geol. and Nat. Hist., Oberlin.  
 C. M. GALLOWAY, Xenia.  
 A. HASTINGS ROSS, Columbus.  
 S. D. PEET, Ashtabula.  
 JOHN SHERMAN, Mansfield.  
 M. HENSEL, Tyndall Ass'n., Columbus.  
 J. A. WARDER, Prest. S. Hor. Soc.  
 M. F. FORCE, Cincinnati.  
 R. BRINKERHOFF, Mansfield.  
 J. C. JEFFERS, Cleveland.  
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 G. A. REED, West. Res. Col.  
 J. B. HELWIG, Bellefontaine.  
 ED. CLAYPOLE, Antioch College, Yellow Springs.  
 E. B. KELLOGG, do. do. do.  
 JOSEPH COX, Cincinnati.

# Ohio State Archæological Convention.

## FIRST DAY.

MANSFIELD, OHIO, *Sept. 1s<sup>t</sup>*, 1875.

THE following Delegates registered their names :

<i>Names.</i>	<i>P. O. Address.</i>	<i>County.</i>
✓ R. Brinkerhoff.....	Mansfield.....	Richland.
L. Harper.....	Mt. Vernon.....	Knox.
J. S. McMann .....	Washington.....	Guernsey.
John H. Klippart.....	Columbus.....	Franklin.
✓ G. S. B. Hempstead.....	Portsmouth.....	Scioto.
✓ N. S. Townshend.....	Columbus.....	Franklin.
✓ M. C. Read.....	Hudson.....	Summit.
✓ Thos. W. Kinney.....	Portsmouth.....	Scioto.
✓ C. C. Baldwin.....	Cleveland.....	Cuyahoga.
M. Hensel.....	Columbus.....	Franklin.
Silas Courtright.....	Hooker's Station.....	Fairfield.
John Y. Glessner.....	Mansfield.....	Richland.
P. E. Blesch.....	Columbus.....	Franklin.
✓ A. A. E. Taylor.....	Wooster.....	Wayne.
O. N. Stoddard.....	Wooster.....	Wayne.
H. H. Wells.....	Cleveland.....	Cuyahoga.
E. W. Dimmock.....	Dupont.....	Putnam.
J. N. McGibney.....	Mt. Vernon.....	Knox.
John S. B. Matson .....	Shelby.....	Richland.
P. Bigelow.....	Mansfield.....	Richland.
C. T. Sherman.....	Cleveland.....	Cuyahoga.
G. W. VanVleck.....	Havana.....	Huron.
P. H. Clark.....	Ashland.....	Ashland.
J. P. Henderson.....	Newville.....	Richland.
✓ W. B. Sloan.....	Port Clinton.....	Ottawa.
✓ A. H. Agard.....	Sandusky.....	Erie.



F. D. Parish .....	Sandusky .....	Erie.
Benj. Gass.....	Mansfield .....	Richland.
✓ Isaac Smucker.....	Newark .....	Licking.
R. P. Fulkerson.....	Ashland .....	Ashland.
S. W. Miller.....	Mansfield .....	Richland.
✓ Will. M. Cunningham.....	Newark .....	Licking.
Benj. Stayman.....	Petersburgh.....	Ashland.
A. Hamilton.....	Steubenville .....	Jefferson.
J. M. Mitchell.....	Corsica .....	Morrow.
Jacob Brinkerhoff..	Mansfield.....	Richland.
A. J. Erwin.....	" .....	"
C. S. Doolitell.....	" .....	"
✓ O. H. Booth.....	" .....	"
Wm. Bushnell.....	" .....	"
D. H. French..	" .....	"
E. W. Smith.....	" .....	"
J. E. Wharton.....	" .....	"
Thos. C. Bushnell.....	Ashland .....	Ashland.
R. S. McFarland .....	Mansfield.....	Richland.
✓ S. D. Peet.....	Ashtabula .....	Ashtabula.
John Sherman.....	Mansfield..	Richland.
Kent Jarvis.....	Massillon..	Stark.
J. W. Craig.....	Mansfield..	Richland.

## Relics on Exhibition.

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The following is a partial list of the relics on exhibition in the rooms of the Public Library, together with the names of the contributors :—

J. P. Henderson, of Richland county, presented the largest and finest collection of the works of the Mound Builders, including polished stone implements of war and of household work ; also pipes, idols and images, together with more modern hatchets, hammers, spears and arrow heads, gambling apparatus, and other curiosities, almost amounting to hundreds.

J. W. Craig, of Richland county, presented a somewhat similar, but less extensive collection, except in arrow heads and hatchets.

John S. B. Matson, of Richland county, presented the next most extensive collection—his arrow heads of great variety and well arranged.

R. S. McFarland, of Richland county, offered a large and valuable collection, which he has generously donated to the public use.

E. W. Dimmock, of Putnam county, also exhibited a handsome collection, which he gave to the same purpose.

Thos. C. Bushnell, of Ashland county, exhibited a handsome collection from his large and rich cabinet.

S. W. Miller, of Richland county, furnished a neat collection, and his photographs of Mississippi pottery and calendars were much admired.

G. W. Van Vleck, of Huron county, presented a collection, among which were two pipes of immense size.

## PROCEEDINGS.

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At 11 o'clock A. M. the meeting was called to order by R. Brinkerhoff, of Richland county. N. S. Townshend, of Franklin county, was elected chairman *pro tem.*, and C. C. Baldwin, of Cuyahoga county, Secretary *pro tem.*

On motion, a Committee on Permanent Organization was nominated and elected, consisting of—

Wm. B. Sloan, of Ottawa county ;  
A. H. Agard, of Erie county ;  
Wm. M. Cunningham, of Licking county ;  
A. J. Erwin, of Richland county ;  
Thos. W. Kinney, of Scioto county.

A Business Committee was then elected, consisting of—

S. D. Peet, of Ashtabula county ;  
R. Brinkerhoff, of Richland county ;  
A. A. E. Taylor, of Wayne county ;  
A. Hamilton, of Jefferson county ;  
J. H. Klippart, of Franklin county.

R. Brinkerhoff then invited the gentlemen present to meet socially at his house in the evening.

It was *Resolved*, That the invitation be accepted, with thanks for the gentleman's courtesy.

The committees then retired, and remarks were made by the following gentlemen, called for by the audience :—O. N. Stoddard, of Wayne county, and J. E. Wharton, of Richland county.

The Committee on Business returned and made the following report, which was accepted and adopted :—

### REPORT OF COMMITTEE ON BUSINESS.

1. We suggest and earnestly recommend that a committee be appointed to draft a Constitution and By-Laws for the purpose

of effecting a permanent organization ; the report of which committee shall be first in order to-morrow morning.

2. We submit the following order of business for this afternoon, viz.;—

Address of Welcome by R. Brinkerhoff ;

Address by S. D. Peet ;

Paper by Isaac Smucker.

It was also,

*Resolved*, That the Secretary *pro tem.* be requested to secure the enrollment of the members of the Convention.

Moved that a committee of five be appointed to prepare a Constitution and By-Laws, and provide for the permanent organization of the Association.

The motion prevailed, and the committee was chosen, consisting of—

R. Brinkerhoff, of Richland county ;

O. N. Stoddard, of Wayne county ;

M. C. Read, of Summit county ;

S. D. Peet, of Ashtabula county ;

M. Hensel, of Franklin county ;

to which was added, on motion—

C. C. Baldwin, of Cuyahoga county.

The meeting then adjourned to 2 o'clock P. M.

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## AFTERNOON SESSION.

Convention met in the Lecture Room of the Methodist Episcopal Church at 2 o'clock.

W. B. Sloan, from the Committee on Permanent Organization of the Convention, offered the following report :—

The Committee on Organization recommend the following gentlemen for officers of this Convention, viz.:—

*President*—A. A. E. Taylor, of Wayne county.

*First Vice President*—Isaac Smucker, of Licking county.

*Second Vice President*—Frank D. Parish, of Erie county.

*Secretary*—O. H. Booth, of Richland county.

The report was received and unanimously adopted.



President Taylor assumed the chair with a few appropriate remarks, and the other officers took their places.

R. Brinkerhoff, of Richland county, then read the Address of Welcome, as follows:—

GENTLEMEN OF THE CONVENTION—It is my very pleasant duty to bid you welcome to the hospitalities of our city, and to whatever we have been able to prepare for your entertainment in that department of scientific inquiry known as Archaeology. What we have is but little, but all we have is at your service for examination and consideration. However, every little helps, and you will readily perceive that if every county in the State would do as well, a vast amount of material would be at hand for the elucidation and solution of Archaeological problems.

Doubtless every county could do as well, and perhaps a great deal better, and our object in instituting this Convention is to bring about such an organization and such co-operation as will induce every county to collect and concentrate and contribute to a common fund whatever can be gleaned within its boundaries upon archaeological subjects. Ohio is rich in prehistoric remains, as much so perhaps as any State in the Union. It is estimated that of ancient mounds alone known to exist within our borders there are over ten thousand in number.

There is, perhaps, no body of land of equal size upon this continent, or even upon the globe, which is better fitted for human habitation, support and enjoyment, than this very State of Ohio. It has been so, probably from the very beginning of the existence of the human family upon this planet.

The prehistoric man knew a good country just as well as we do, and hence he made Ohio and the Ohio Valley the home of teeming populations, and the seat of empire. It was so then, it is so now, and it will continue to be so as long as the earth remains under existing conditions.

It is meet, therefore, that the Ohio Valley should take the lead in archaeological investigations. The field is richer than any other, and the harvest is riper, but the laborers are few. What we specially desire just now, and what we consider the most immediate and pressing work of this Convention, is to secure laborers in this archaeological harvest. Let us gather the grain into storehouses before it is utterly destroyed by the tramping hoofs of modern utilitarianism.

Let us gather the grain first, and leave to a leisurely future the more pleasant task of converting it into all desirable scientific uses. In short, we want a relic-hunter in every county and township in the State, who will bring to the knowledge of a central association, and through that association to the knowledge of the world at large, all the information that his locality can furnish upon archaeological subjects. This should be our first work.

Energetic collecting, of course, does not exclude energetic thinking, and, therefore, contemporaneously with the collector, the scientist is

required to arrange and classify and generalize and interpret; each one in the department specially assigned him. By this means we shall make progress, and it is the only way in which we can make much progress.

This co-operation, gentlemen of the Convention, is what I conceive to be the main object of your assembling together here today. Of course, the ultimate outcome of all this is far higher and nobler than the mere gathering of relics.

Relics are only the letters of the archæologist's alphabet, but nevertheless they are the indispensable beginning of all archæological knowledge. What this knowledge will lead to no one can tell; but still, now, as heretofore in all the ages of the past, "the noblest study of mankind is man." What are we? Whence came we? Whither are we tending? These are the mighty questions that clamor for solution in the universal heart of man.

It is true we have a written revelation which answers these questions, and many of us, and perhaps all of us who are here to-day, believe that it answers them rightly, but still we all know and all admit that there is another gospel, which, so far as its revelations extend, is more conclusively true to most minds than the other. The gospel of Nature is a thing of the senses; it can be seen, and felt, and handled, and tasted. It cannot be interpolated by deceitful or designing men, to an extent beyond detection, and therefore if the gospel of Nature comes in conflict with the gospel of Revelation, the latter must go to the wall. It is inevitably so in the nature of things.

Now, for myself, I am free to confess to you that I believe in both these gospels. My happiness in the present, for the most part, and all my hopes of the future, are based upon their truthfulness, and their essential harmony. With faith shaken in either, existence becomes the saddest enigma of which it is possible to conceive.

Nevertheless, let us have the truth, whithersoever it may lead. If then, we are to seek for truth in the line of human destiny, where can we search more hopefully than in the line of human experience? This is archæology in its highest and noblest sense.

Archæology, it is true, is but a single chapter in the gospel of Nature, but it is so associated and correlated that its interpretation demands a mastery of all the others. It is not the first, but the last. It is not the root, or the stem, or the branch, or the leaf, but the consummate flower of nature. It is the keystone of the mighty arch which the Æons of the infinite past have builded. In the temple of Nature, therefore, archæology is the inner sanctuary, and to-day, as we stand upon its threshold, let us do so reverently, and in the spirit of Him who loosed the sandals from his feet because the ground upon which he stood was holy ground.

Do I magnify mine office? Do I, as an archæologist, overstate our mission? Nay, verily, there is no higher theme than man and his destiny, and certainly the only way that science can prophesy man's destiny

is by the study of man's history. What has been will be; but in the order of Nature we may hope that it will be more abundant in all that is good. Let us, then, know all we can of man as he has been. The poet has said that

"We are the same our fathers have been;  
We see the same sights our fathers have seen;  
We drink the same stream and view the same sun,  
And run the same course our fathers have run."

Whether this be true or not, archæology alone can interpret from the gospel of Nature.

This, then, oh friends, is the duty which lies before us to-day. It is to turn the leaves and study the records of this gospel of Nature in its teachings of man; and in behalf of those who have convened this assembly I bid you welcome.

Rev. S. D. Peet, of Ashtabula county, followed with an address, entitled

*The Tests by Which to Determine the Origin and Affinities of the Prehistoric Races of America.*

GENTLEMEN:—We are searching for the lost arts of America, but in seeking them we hope to find the lost man.

The prehistoric races are the proper object of our research, as has already been said. I desire to follow from the known to the unknown, and by giving you a few tests by which you may determine the ethnic affinities of these races you may find assistance in your investigations and find suggestions [which are useful in studying these relics of antiquity.

Without further introduction, I shall proceed to give these tests in their order.

There are several methods of determining the affinities of every race.

*First*—The first that we shall mention is by the tests of language.

Comparative grammar is a modern science, but it has so advanced under the labors of Bopp and Oppert and others, that it is very essential in determining ethnic divisions.

The history of mankind has been traced by the study of language far back into the ages unknown. Words have served as mile stones to show the progress which men first made; or, like brands left at each camping ground, indicate the tracks which the great family followed at its earliest migration.

The points of separation have been marked by monuments of speech, and there are words still lingering about the primitive abode, the lone remnants of a race that has departed. Their testimony is of the glories which have passed away. The tale is short; their form is shadowy; their voice sepulchral; but something may be learned from them of the earliest days of the human race.

The various stages, too, through which society has passed before its records began to be written may be learned from language; even the process by which it became established in the later homes and habits.

One remarkable thing is true of the test of language:—According to it the human race has been divided into three, and perhaps only three, great branches. Corresponding to the geographical division of the earth, it gives that ethnical division which is also given by the earliest history of the world.

The Indo-European, or Aryan language, is acknowledged to have sprung from the same central point, which is designated by this history to be the birthplace of the human family. The Shemitic language, too, was spoken by races which first sprung from this original seat of human empire. Words are discovered on the bricks of Mugheir and in the ruins of the first Chaldean Empire, which show that the first civilization of the world was made by a mingled Shemitic and Hamitic stock.

The other grand division is much less known, and not so easily identified. Yet even the Turanian family of languages may prove to be the native tongue of a great, wide-spread Hamitic race, which first left their marks in the ruder civilization of the first stage of progress and the lower types of the human species.

The rudest form of letters and of art are acknowledged to have belonged to the Hamitic stock, and even the structure of language of the Turanian indicate that this wide-spread people may also have been Hamitic in descent.

In the early Chaldean ruins, in the dynasties of Egypt, there are traces of a civilization preceding the Aryan, and the Shemitic, and we are inclined to place the ancient Chinese Empire in the same list as belonging to this primitive Hamitic race. At any rate the similarity of their language in organic structure, the resemblances traced in their rude and primitive mode of writing, the peculiarities, too, which may be traced in the architecture of all these races, are worthy of study to decide the point whether the Turanian and Hamitic stock were not the same, and these the most ancient originators of human culture.

Thus the grand divisions of the human race are proved by language to have separated from a common center, and may by it be traced to a common source; and, reasoning from analogy, we may expect that those races which are entirely prehistoric, and whose language is not known, may also be traced to the same great source.

*Second*—Another method of discovering the affinities of any race is that of the physical and natural history.

The constitution of man is a pretty good test as to what his origin may be.

I know that there is great uncertainty attending this department of our great ethnological science, yet there are criteria given us which may at last determine the varieties as well as the species to which we belong. The human species we believe to be sufficiently distinct from the other



animals of the earth to be recognized without a great deal of study, but it is for our science to so distinguish the shades of difference in the various races as to trace their lineage and ancestry, not back to the monkey from which they sprang, but to the different ancestry which has given a mark to each member of the human family. This department of archaeology then has great importance, for the various eccentricities of structure—whether in feet, or hands, or head, or face—may assist us greatly in determining the ethnical affinities of the prehistoric man.

There are various modes of dividing the race, and ethnologists differ greatly. Five varieties are recognized: the Caucasian, Mongolian, Ethiopian, Malay and American. Prichard, however, adds two more, making seven races; while Pickering recognizes eleven distinct classes. Camper insists that the facial angle is the test; Cuvier declares that the measure of the cranium is the rule; while Prichard looks to the color and complexion for his classification. Thus ethnologists are divided, and for the very good reason that the shades of difference so intermingle that even the classification of Luke Burke into sixty-three races may have some ground of truth. There is no doubt that the physical structure of man is greatly modified by climate and external circumstances, and we might safely divide according to geographical lines, because each country will have its different type of man.

European, Asiatic and African may be readily distinguished, because the modifying causes of these different continents have greatly changed the very constitution of their inhabitants. So, too, the South Sea Islander, the Australian, and the native American, bear the stamp of the "earth mold" into which they were run. There is, therefore, much uncertainty in this test of the origin of a race. Yet there are modes of study which may greatly help us. Take, for instance, that department which is so interesting to some of us—namely, "craniology,"—and you will be greatly interested to see the wonderful help given to the study of the prehistoric races. According to the shape of the skull we would classify the prehistoric races. This science of craniology is giving us excellent tests. By this we may learn to recognize the Mound Builder as readily as we would a white man. The traits and habits of the different races are also by it determined, so that we may know the characteristics by the skull as readily as the phrenologist learns the character of the man whose head he manipulates.

The national affinities of the two pre-historic races, the Mound Builder and the Red Indian, are proved to be different, and investigations will be carried on until we shall know, also, through what line we shall trace these differences.

The races have been divided into three—the Dolicocephalic, the Orthocephalic and the Brachycephalic—and by the breadth, length and height of the human cranium do we determine the race affinities of the lost men of America.

The facial angle has much to do with the intelligence of the human

creature. It is held by some that the earliest races were of such low order of intellect that they were nearer the brute creation than the present man. But the mounds disclose to us the fact that the whole race of Mound Builders had a forehead greatly resembling the famous Neanderthal skull, and yet they excelled in civilization the culture of the Red Indian, who has a skull much like the white man. So that the "missing link" disappoints us.

According to the test of the skull we find a far different origin to the Aztec, the Carib and the Abernaki races, and the east and west coast seem to have been settled by different nations, and these two were distinct from the primitive residents of the central valley of the continent. The resemblance of these various races of America to the different people now dwelling in the eastern portion of the Asiatic continent may yet show exactly the national affinity of each; and so their line of emigration and the origin of their authors may be determined by so strange a thing as the shape of their skull. The physical formation is indicative of ethnical character at any rate. We could expect the narrow head and steeply crown and low forehead of the Mound Builder to show a far different character in that race than the broad head, high forehead and straight skull of the Indian would indicate. The Aztecs and Mound Builders were necessarily an inoffensive, superstitious, quiet, agricultural people, because they were so constituted. The Spaniards found them so in Mexico, and the savage invaders found them so in the midst of their mound buildings.

The Indian, however, was necessarily a treacherous and wily and bloodthirsty savage, because both his ancestry and his skull formation made him necessarily combative and secretive. The one must be agricultural and devotional, the other must be hunter and savage.

*Third*—Another test still may be found in this very ethnical character itself. Psychology, then, will furnish a third criterion for judging this affinity. Now the psychology of a pre-historic race may not so easily be learned, because the man is dead whom we seek to know. His works are left, however, and these we study with great interest, hoping by them to know the character. We study, then, the art and the architecture of these nations with great attention, because we expect to learn the minds of those who made them. There are letters wrought in stone, or wood, or copper, which reveal to us the minds of those who wrote them.

Art has an alphabet of its own. However rude or barbarous it is, it reveals the character of the nation that left it.

The habits, too, of a nation, are but the mental traits put into action.

For this reason the nomadic, or the architectural, or the agricultural state of a nation may be indicative of its affinity.

It is a remarkable fact, mentioned by Cox and hinted at by Niebuhr, that the Aryan race was never found in the savage state. The hunting class must be other than Aryan, then, in their origin, if this be true.

The "Shemitic" stock has, on the other hand, always been nomadic in their habits. They, however, were never savages in their tastes.

The Assyrian Monarchs, to be sure, followed the pleasures of the chase in the interval of their warlike exploits, but they never were the wild hunters of the forest.

Nimrod, however, was the mighty hunter, and he is a representative of his race. The "Hamitic" stock is found in the hunting condition in many places. The witness of history agrees with the witness of ethnology. The great eruptive conquests and colonizations have, as a rule, been Ugric, either Mongolian, Turkic or Finnic, says Isaac Taylor.

The Huns, whose affinities are believed to be Turkic, are first heard of as a fierce and troublesome people, who roamed over the steppes to the north of the great wall of China. In the fifth century they, under Attila fought their way from the Tigris to the Danube.

The "Finns" in the seventh century threatened Constantinople and established the Bulgarian kingdom. In the ninth century another Finnic people, the Magyars, established themselves in Hungary.

In the thirteenth century various Mongolian hordes intruded themselves upon the civilization of the world. They conquered China; they established themselves at Bagdad; they, under Tamerlane, carried their conquest into Persia. To-day the ruling powers of China, India, of Syria and Asia, are Ugric or Turkic—the results of conquests gained by this warlike people. They are segregated and scattered, but they have migrated in tribes or nations, even as the savages to-day will migrate. They are hunters of the human species. Warlike as the Saracens, they conquer by their ferocity; but, unlike the Saracens, they never return to their homes when their conquest is ended. For more than two thousand years the eruptive conquests of settlements have been the habits of the Ugric race. They established the fact that there was a universal tendency amounting to an ethnic trait toward national migration and distant conquest.

Wherever we discover these eruptive movements, and migration and conquest going together, there we may see traces of this great "Hunter Race." "Scythic" in descent, "Mongolian" in history, savage in character; and to these belong the red Indians of North America. The Scyths of Herodotus have disappeared from Europe, but are found in the wilds of America. They still scalp their victims taken in war as they did three thousand years ago. They are attended by the dog, as the sign of their civilization. From the shell-heaps of Denmark to the wigwams of Oregon and Ohio, they are found having the same national traits and attended by the same animals.

*Fourth*—The archaeology of a Nation is the fourth test of its ethnical affinity. Art and architecture are evidences which should be studied attentively. These are ethnical as plainly as are the facial angles or the languages. These are especially noticeable to us in America. Now, I am aware that there are those who hold that the architecture of a peo-

ple is no evidence of its ethnical affinity, but is only the result of its particular stage of progress; but there is a deeper method of research than this attractive and interesting theory. We may suppose the ruder structure to belong to a ruder people, and the more advanced to a later stage of human progress, but we shall find that there are types of architecture which are race tests, and which have prevailed with races throughout their whole career.

The Pyramids of Egypt, the Tower of Babylon, the elevated platforms of the Toltecs, and the truncated pyramid and earthworks of the Mound Builder, all have a type about them which is not merely a sign of the stage of progress to which society attained, but they are all race signs. No other than the Hamitic stock has ever erected pyramids for worship, but wherever this race has extended, there you find the inevitable structure indicating both the religion which prevailed and the ethnical trait which is inseparable. They may have been erected when a similar condition of society existed, but this condition was the result of their ethnical peculiarities rather than owing to the stage of their progress.

A condition of servitude which could only obtain among a sensuous and inferior people existed in all these lands where they were builded. The monarch was regarded with all the reverence and fear of a divinity, whether in the halls of the Montezumas or on the plains of Shinar or in the palaces of the Pharaohs.

Priest and king with divining rods and cups, the monarch ruled an abject people. One man power, but that owing to the superstition of the people.

The massiveness of the works surprises the traveler, whether in America or Asia or in Africa, but the design and the spirit are the same.

The platform mound of Cahokia, Illinois, was supposed to contain one-fourth the cubic contents of the great Pyramid of "Ghizeh," and that at Grave Creek is equal to the third Pyramid of Mycerinus, but these were heaped up by a people destitute of the knowledge of iron, and who had no domestic animals and no machinery to aid them.

They were evidently a people like the Egyptians, ruled by some one monarch, who was able to combine vast numbers in the erection of one structure, and, at the same time, able to provide them with food in abundance. The Mound Builders cultivated the soil like the Egyptians, and had maize for their food, as the date, and leek and onions supplied the wants of the laborers on the Nile.

No Indian was ever known to toil in this manner. No government existed among the red races that could bring them to such servitude. The authority of a chief or sachem is too slender a thread for such a people.

The domestic economy of the two races was different and exhibited a widely different condition of society. In the one case, the people had



fixed habitations and methodical pursuits; in the other, they led a nomadic life and retained the habits of the hunter. Even the village Indians of the South, with their cornfields, stockades and bark houses, showed a different type of civilization from the permanent settlements of the Mound Builders. Their earthworks, military defences and sacred enclosures could not have been made for the same class of persons, nor under the same system of government with that which prevailed when Columbus discovered America and De Soto began his explorations of the continent.

To such a condition of society, as existed only with the Hamitic race, a race doomed to servitude at the outset, do we trace the most of these monuments, both of the old and the new worlds, whose massiveness astonish but whose objects baffle us.

Buckle says of the Pyramids: "No wealth, however great, no expenditure, however lavish, could meet the expense which must have been incurred, if they had been the work of free men. It took two thousand men three years to carry a single stone from Elephantine to Sais. The canal of the Red Sea cost the lives of one hundred and twenty thousand Egyptians, and to build one of the pyramids required the labor of three hundred and sixty thousand men for twenty years."

"When we read of the great national highway of Peru," says Foster, "paved with slabs of stone stretching for more than a thousand miles; of the princely palaces of the Incas, built of hewn stone and supplied with water by aqueducts of costly structure; when we see such cities as Palenque, Copan or Uxmal, we must admit the former existence of a well ordered government. When in Mexico we behold such a vast structure as the terraced pyramid of Cholula, one hundred and seventy feet in height, with a base of thirteen hundred feet—nearly double that of the great pyramid—with its masonry of brick, and covering an area of forty-five acres, and find that the object of this immense expenditure of human labor was to enshrine in an interior chamber of stone, two corpses, whose living names have long since perished from the recollection even of their own people, we are brought to the sad conclusion that the industry of the great mass of the population was at the absolute command of the few."

These ancient civilizations of both hemispheres show a constitution of society altogether similar, and yet it was a condition which was peculiar not so much to the stage of civilization, as to the ethnical traits of the people with whom they prevailed. As the civilizations of the old world, growing out of the peculiar conditions of soil and climate, developed certain forms of art which are original and unique, so on this continent we see the crude conception as first displayed in Ohio, Wisconsin and Illinois; and the accomplished results in the stone-faced foundations of Uxmal and Palenque. It is impossible to describe or define the order of art or architecture which may be classed as distinctive of a race, but there are general characteristics which may be recognized, and which serve to connect the art with the people.

It has been maintained by Isaac Taylor and by Dr. Wilson that the mental traits of the great Turanian race have developed themselves in the imitative arts. By this means the former is enabled, he thinks, to identify the ancient Etruscans with this stock. The same thought is expressed by Mr. George Bancroft in his *History of the United States*—that the imitative rather than the inventive characterize the savages of North America as well as the Mound Builders—a great race peculiarity. If it were only the result of a certain stage of civilization, the wonder is that it is so wide spread and so permanent. The antiquarian student is impressed with the fact that certain races never go beyond it.

Sir J. G. Wilkinson, in his description of the arts of the ancient Egyptians, laments that this gifted and highly cultivated people could never go beyond the stereotyped and formal state, and this he ascribes to priestly influence. But the fact is, they were not capable of it. With all their skill, luxury and sensuousness, there was no ideality. The Greek statue could never be devised, and the Attic painting could never be executed, on the banks of the Nile, not because the priests forbade it, but because the people were not constituted for it. They could imitate and could build, but they could not invent nor attain the ideal.

The Chinese belongs to the same stock, and he is imitating and following patterns; but lacks that qualification which belongs to the Aryan stock but does not exist in the Turanian nature.

The works of art found in the ruins of Mexico and the stone pipes found among the habitations of the Northern races, are imitative but not inventive. In many respects the architecture of ancient Mexico resembles that of the Chinese; but this trait is an ethnic test, which is as wide spread as the race itself.

*Fifth*—Religion is the fifth and last test of ethnical affinity.

This is the most difficult part of the whole subject, but we take the position at the outset that religions are ethnical. There are five different kinds of religion which may be said to be "indigenous," and these are the only kinds which can be useful for our purpose. They are indigenous in the sense of having arisen from the natural tendencies of the different races rather than from the invention of some mind.

These are "prehistoric" in their origin. Take the five existing religions, always excepting Christianity, and you will find that each had a human founder, and was the work of one brain; but the systems of which we speak grew from many minds and were not *made*. Brahmanism, Buddhism, the Zend religion, Confucianism and Mohammedanism were the works of a particular age and person, but ethnical religions grew through many ages.

Of the established or invented systems it may be said, however, that they, too, are in a sense ethnical. India, China, Persia, Arabia, are the homes of these religions as well as their founders.

The original systems existed before these, and are of ethnical origin. We none of us understand the early history well enough yet to describe

exactly their origin. There was a shadowy, mythical period, in which language as well as religion arose.

Take the five primitive religions and you will find that they were marked by the peculiarities of the minds which either embraced or formed them.

1. The form of "Animism" is the rudest and wildest of them all. It is peculiar to the savage state. The savage will people all nature with a spirit which, like his own, is mysterious. Everything wonderful, everything that surpasses his knowledge, everything that has a power beyond his own, everything that baffles his search, and is beyond his comprehension, is a "totem," or "manitou," or spirit, and he is filled with awe before it.

All nature is filled with these divinities. The trees, the rivers, the stones, birds, posts, frosts, fishes, even clouds and the heavenly bodies, have souls and he worships them. They become his ancestors, and are regarded as his tutelar divinities, guarding his tent, guiding his tribe and protecting his people. It is not so much a worship of the Great Spirit as a belief in spirits of all kinds. To this religion there is no form, no sacrifice, no temple and no priest. It is the wild, free faith of the primitive inhabitants of the forest. It may terrify or it may soothe, but it is the spirit of Nature speaking to the untutored mind. The savage may be worshipping the spirit or the totem one moment, and the next engaged in the slaughter of the innocents, for he is only a creature of impulse and passion in both.

It is a religion of superstition, of passion and of mere impression. The wild prophet may excite a people to frenzy or the "medicine man" may roll in violence and shake his tent mysteriously, but after the spell is over there is no trace of faith, and he acts only as an animal with religious instincts, subject to the impressions of Nature.

2. The second form of ethnical religion is like this in some respects, and yet it is an advance. It is the worship of the heavenly bodies. It arose early in the history of mankind. Pyramids were erected for it long before there were temples. It was the religion of the early Babylonians, and the Chaldeans were the stargazers. On the Nile were Pyramids with astronomical accuracy in their lines and angles, and the priests were trained in the occult science of astrology.

The pyramids of Mexico were also erected to the heavenly bodies. The fires were lighted on their summits, and the human victims were hurled down their sides, while the blood was collected in reservoirs, until the grim idols were satiated with human slaughter.

Now this religion was of a different origin from the other. The Scythian was as much a savage in his worship as is the Indian of North America; but Scythism and Sabianism were two separate systems, and both have come down by different lines to the inhabitants of America from a far distant ancestry.

3. The third system is that of Anthropomorphism—ancestor-worship. This, too, arose near the birthplace of the human race.

Early in the Assyrian Empire, the worship of ancestors formed an essential feature of their religious system. Nimrod, the mighty hunter, became a divinity. Ashur, the great founder of the empire, also was worshiped.

The two systems were blended—the worship of the heavenly bodies and the worship of ancestors—and then the planets took the names of men.

The blending of Animism and Sabianism had peopled the sky with animals, but now human beings rule the upper world. Every nation put its own ancestor at the head of the heavenly Hierarchy. In Greece it was Japheth or Jupiter, in Egypt it was Chem or Ham, and in other nations the chief divinity was the ancestor of the race.

Thus rose the mythology of the world.

The "Hero worship" may have followed. The Incas of the Peruvians, the ancestors of the Chinese, the Kings of the Mexicans, became divinities. Thus, arising from different sources, beginning at a later stage of development, we may in America even see the different ethnical affinities of the races from the evidences of the religions which they held. The emblems of the Totems are still discovered in earthworks. The mounds and pyramids sacred to the heavenly bodies are also discovered. Ancestor worship is found in Mexico and Peru, while an elemental worship, like that of Persia, may have prevailed in the pyramids of the Toltecs and the Maya races.

4. We put then the elemental worship as the fourth in order of the indigenous religions, and find that this had arisen before the Mexican or Peruvian faith was formed. There are resemblances between the fire worship of the two continents which point to a common origin. The towers of Persia and the temples of India were, according to Maurice, devoted to this "elemental" worship, and it is not improbable that this was the form of religion which first prevailed in India among the Autochthons of that time, before the Aryans had displaced them from their primitive seat. Religion had reached this stage before it sought a place on the new continent beyond the Sea.

5. Another form also found among this great wide spread race was the Fetich, or idol worship, and this too reached the American continent with the migrations of the people. Idolatry does not prevail among the savages, because their ancestors did not reach the idolatrous condition. This we assert with some degree of diffidence. Idolatry may be found among the savages, but their Scythic origin does not favor it. The southern tribes, however, and the early inhabitants of Mexico and Peru were idolaters, and possibly the Mound Builders.

Herein consists another test and proof. The time may come when we shall trace the traits and customs of these races of America to their original source, but for the present we need to know what is true of each of them, and then their ethnic affinity will be more fully seen. The whole world will need to be traversed, all nations studied, before we can

arrive with a certainty at conclusions, but we have given these as suggestions and tests only.

With other facts, we need to study the religions of these prehistoric races with their historic connections, and by taking a broad range in our investigations, we may find with a considerable degree of certainty the very origin and history of these races, from their earliest wanderings to the time of their extinction on this continent.

After the conclusion of Mr. Peet's address, on motion of J. H. Klippart, there was a recess of ten minutes, at the expiration of which the Convention reassembled, and J. H. Klippart moved the adoption of a rule that all papers presented to the Convention be subject to discussion. Carried.

M. C. Read, of Summit, while he did not wish to be understood as criticising the able paper of Mr. Peet, thought there should not be haste in accepting theories. We should have full discussion and investigation. He thought we were far from arriving at all the truth as yet.

W. B. Sloan, of Ottawa, spoke approvingly of the general tone of the paper, but said he must dissent from some of the conclusions.

Mr. Peet disclaimed the idea of setting up anything before having arrived at the facts. He considered the true scientific method to be the "synthetic," and did not believe in working a philosophy into facts, but in working the facts up to a philosophy. He welcomed criticism, and did not expect his conclusions to be taken merely because he had announced them, nor did he suppose the Convention would be held responsible as having endorsed them; but the facts which he had learned in his studies had led him to them as the true and certain points of arrival, to which archæologists might look in their studies.

Isaac Smucker, of Licking, was then requested to read his paper, which he proceeded to do, as follows:

## ADDRESS OF ISAAC SMUCKER

### ON THE MOUNDS AND EARTH WORKS OF LICKING COUNTY.

Licking County, Ohio, abounds in Mound Builders' works. In few localities in the Mississippi Valley are the works of this ancient, extinct race more extensive, more numerous, more diversified in style and character, more gigantic in proportions. Mr. Atwater characterizes "those on the Licking, near Newark, as some of the most extensive and intricate,



as well as interesting, of any in this State, perhaps in the world." "On many accounts," he further observes, "they are quite as remarkable as any others in North America."

The conical or circular earth mound is the most common form or style of the Mound Builders' works in Licking County. They are of all sizes, ranging from three feet to twenty-five feet in height, and from ten feet or less to over a hundred in diameter, and number probably some hundreds. A few of them are not round but are approximately oblong, oval or octangular.

Conical stone mounds are not very numerous in this county, only seven of them having been found, and they have been much reduced below their original size. Indeed, two of them situated six miles south of Newark, (one having had a diameter at the base of 45 feet, and the other of 30 feet, and each reaching an altitude of 25 feet,) have been entirely removed. Another near them, eight miles distant from Newark, has been partially removed, the stones having been found useful in the construction of canal locks, banks or walls for the "Licking reservoir," and cellar walls for buildings in the neighboring villages. It was of gigantic proportions, measuring 183 feet in diameter at the base, and was probably 35 or 40 feet high. Its present height would average only 8 or 10 feet, but portions of it are still 12 feet or more. Persons who were upon it before any of the stones were removed, report its height at the above figures. It is situated on high ground, and was built of large unhammered stones of tolerably uniform size and weight. Another, situated 8 miles southeasterly from Newark, and within a few miles of the last mentioned, was a symmetrical mound when first found, about 40 feet in diameter and 20 feet high. An attempt to get down into the middle of it by throwing the stones over its sides from the top reduced its height to ten feet and increased its diameter to about 60 feet. The other three are situated north of Newark, and being smaller in size are comparatively unimportant. But little remains of the one five miles from Newark—the others, ten miles distant, have not been changed much. They are near each other, (one being quite small) and are situated on the same ridge, two miles south of the village of Utica.

The tumuli, or earth mounds mentioned above, and of which I have given some hundreds as the number, approximately, in Licking County, are classified and known by the various titles of Sepulchral Mounds—Sacrificial Mounds—Temple or Truncated Mounds—Mounds of Observation—and Symbolical Mounds. The latter are also called Animal Mounds or Effigies, or Emblematic Mounds. The first named, or Sepulchral Mounds, are altogether the most numerous. Of the other classes there are only a few of each, except the Mounds of Observation, or out-looks. Of Effigies, Emblematic or Symbolical Mounds we have but two; one representing an Eagle, or at least a bird of immense proportions, with out-spread wings; the other a Crocodile or Alligator. The first named is situated within a circular earth-work or enclosure, (also the work of

the Mound Builders,) containing about thirty acres, and familiarly called in our early times, "The Old Fort," more recently the "Fair Grounds," our County Fair having been held there, annually, for twenty years or more. The elevation is sufficient to present distinctly the outlines of the bird, which measures nearly two hundred feet from head to tail, and almost as much from tip to tip of wings. The exploration of this bird mound brought to light an Altar, with marks of fire upon the stone and earth composing it, while ashes and charred wood were also present, indicating a sacrificial altar.

The Alligator Mound is upon the summit of a hill or spur, which is nearly 200 feet high, six miles west of Newark, and near the village of Granville. The outlines of the Alligator, (or Crocodile,) are clearly defined. His entire length is 205 feet. The breadth of the body at the widest part is 20 feet, and the length of the body between the fore legs and hind legs is 50 feet. The legs are each about 20 feet long. The head, fore shoulders and rump have an elevation varying from three to six feet, while the remainder of the body averages a foot or two less, the head and tail gradually tapering off towards the end. The effigy is composed of earth and stone, and has become somewhat unsymmetrical and uneven on the surface, under the operation of the plow as well as under the previous process of the clearing of the land upon the hill, and by the removal of the trees that had grown upon the mound. Winds blowing down the trees, the roots thereby tearing up the earth and stones of which the Alligator was composed, and displacing them, also doubtless tended to deface, deform, and partly obliterate it in places. Moreover, the operations of the snows and rains of centuries could not have failed, in some measure at least, to have marred its symmetry, its regularity, and its once better defined shape and form. Notwithstanding the elements have borne hard upon it, and the destructive, devastating hand of man has been laid heavily upon it, while subduing, wasting, all-devouring Time too has dealt roughly with it, it nevertheless still remains a well defined, correctly shaped Alligator, (perhaps we should rather say Crocodile,) which a stranger, at the first glance, would be able to trace at once without the slightest hesitation or difficulty. The monster reptile lies with his head nearly to the west. On the north of him, twenty feet or more distant from his body, is a slight elevation or small pile of stone called an Altar, which indicates the presence of fire at some time. The Altar has a diameter of a few feet only, and from it a narrow, barely perceptible, slightly elevated, graded way leads to the effigy, reaching it at about midway of the body. Professor Wilson, in his "Pre-historic Man," expresses the belief that this work of the Mound Builders "symbolizes some object of special awe or veneration, thus reared on one of the chief 'high places' of the nation, with its accompanying altar, on which the ancient people of the valley could witness the celebration of the rites of their worship, its site having been obviously selected as the most prominent natural feature in a populous district, abounding with

military, civic and religious structures." When Prof. Wilson wrote, as above quoted, he had not seen the Alligator Mound. Last year however, he accompanied the writer to it, with a view of verifying his measurements, in contemplation of another edition of his able work, as well as for his personal gratification, and upon a view of it and of its surroundings, he saw no reason to change the opinion he had expressed that the mound served a purpose in their religious worship. The effigy may itself have been an object of worship. The ancient Egyptians were worshipers of the Crocodile, so may have been the Mound Builders. They were doubtless an idolatrous race. The hill, it may be remarked, upon which Alligator Mound is found, is a very conspicuous point, commanding an extensive view of the surrounding country, including several fortified hills and a number of mounds; all of which tend to strengthen the presumptions of the learned Professor. In further proof that this class of mounds served the Mound Builders in conducting their religious rites, it will be remembered that the Eagle Mound above described, and belonging to the Symbolical, the Effigy or Basso-relievo class, also had an "Altar." Mr. Schoolcraft, an authority, calls this class of works, (which are gigantic basso-relievos of men, beasts, birds and reptiles on the surface of the soil, elevated only a few feet above the natural face of the ground,) Emblematic Mounds, and that they were "Totems" or heraldic symbols.

Sepulchral Mounds were devoted to the purpose of Sepulture, and were ordinarily pyramidal in form, and usually contained layers of clay, ashes, charcoal, various soils, and one or more skeletons, sometimes many.

Sacrificial Mounds are usually stratified, the strata being convex layers of clay and loam alternating above a layer of fine sand. They also contain ashes, igneous stones, charcoal, calcined animal bones, beads, implements of stone, pottery and rude sculpture. They have altars of burned clay or stone resting in the center of the mound upon the original earth on which they offered sacrifices, employing fire for the purpose.

Temple Mounds are generally pyramidal, but whether round, square, oblong, oval, octangular or any other form, are invariably truncated, appearing to be unfinished, having flat tops. They were probably crowned with temples built of perishable materials, all traces of which have disappeared. They are generally of large base, but of limited height. Their extensive area, form of construction, their steps and inclined planes or spiral stairways leading to their summits, have led to the prevalent belief that they served the Mound Builders as Temples or "high places," upon which were practiced their religious ceremonies. They were used to a limited extent, for burial purposes.

Mounds of Observation or Observatories are found upon prominent elevations, and were doubtless alarm posts, watch towers, signal stations, or outlooks. They are said to occur in chains or regular systems, and still bear traces of the beacon fires that once burned upon them. So says

Samuel Park, Esq., who thinks they are here more numerous than Sepulchral Mounds.

Some feel authorized to further sub-divide our mounds by adding to the foregoing a not numerous class they call the Monumental or Memorial Mounds, which were supposed to have been erected as monumental memorials of their distinguished dead.

Many of the hundreds of mounds in Licking County have been opened, but in very few cases have the examinations been thorough. The plow has been run recklessly over many of them until they are almost entirely leveled; their ruthless destruction, however, was not accomplished merely to gratify the iconoclastic propensities of our plowmen—it was their cupidity that moved them—they wanted the corn the mounds would produce. Of course running the plowshare through them was not a successful method of obtaining a knowledge of their contents. I will mention a few that have been partially explored with some degree of care.

A mound two miles northwest of Newark was opened under the eye of Professor Wilson, of the Toronto University last year, but nothing unusual was found. Other gentlemen subsequently found a quantity of black sand resembling gun powder, in a small vault near the center of the mound, and well toward its base.

In one three miles north of Newark, was found a stone pipe and a curiously cut stone. Curiously shaped cut stones have also been found in others. I do not allude here to several stones that were represented to have been found in our mounds in 1860, one of them being known as the "decatalogue stone," the other having some carvings upon it of masonic significance, as well as Jewish—they were doubtless frauds, and are so regarded here generally.

One, in Newark, removed to make way for the Ohio Canal, in 1828, contained from twelve to fifteen skeletons, (such was the testimony of the late Hon. Israel Dille,) upon which were found numerous plates of mica of the first quality in regard to transparency and size. They average in size six inches wide and nine long, and amounted to bushels in quantity.

The late Dr. J. N. Wilson, of Newark, superintended the opening of a number of mounds, situated in this city, which were composed of a strata of blue clay, then sand that had been intensely heated, and cobble stones, with the other usual layers. These belonged to a group of about a dozen, and contained skeletons and more or less mica. Dr. Wilson read a description of these mounds, with an account of their exploration, before the Licking County Pioneer, Historical and Antiquarian Society; and is numbered as the twenty-fifth in their collection of papers.

Among the most interesting of the mounds in this county is one known as the "Tippett mound," six miles southeast of Newark. It was 75 feet in diameter at the base, and 21 feet high. It was entirely symmetrical, and was composed of layers of earth, charcoal and ashes. Also one layer of human skeletons. It was carefully opened and a stone whistle

and a number of skeletons were exhumed. Two remarkably well preserved crania were taken out. The layer of skeletons was only one foot above the surface of the ground, and nearly twenty feet below the apex of the mound.

But the most carefully examined mound in this county, is situated three miles south of Newark. The exploration was made by Professor Marsh, of the Sheffield School connected with Yale College, and occupied his attention a number of days. Geo. P. Russel, of Salem, Massachusetts, Charles W. Chandler, of Zanesville, and a number of gentlemen of Newark, interested in the local antiquities of this county, also assisted him. Professor Marsh prepared a paper in which he gave the facts connected with the exploration of this mound. The paper was read by him before the Connecticut Academy of Arts and Sciences, and subsequently published in the American Journal of Science and Arts, July No. for 1866, and also in pamphlet form, a copy of which I forward herewith, for the Society you are about to organize. Among the findings in this mound were ashes, charcoal, flint, a broken stone pipe made of soft limestone, pieces of a tube of the same material, a string of over one hundred native copper beads strung on a twisted cord of coarse vegetable fibre; also shell beads, human skeletons, decayed layers of reddish brown powder, layers of burned clay, white chaff, implements of various kinds, lances and arrow heads, six hand axes made of hematite and greenstone, a hatchet, a flint chisel, a flint scraper, many bone implements, five needles or bodkins from three to six inches in length, made of the bones of the deer, an implement for moulding pottery, numerous peculiar implements made from the antlers of the deer and elk, a whistle made from the tooth of a young black bear, spoons made of shells, a vessel of coarse pottery, fragments of a vase, various animal bones, such as the elk, deer, rabbit, wolf, woodchuck and river mussel, and various other things, including seventeen human skeletons in whole or in part. No bones of domestic animals were found.

On an elevated ridge in the south-eastern portion of Licking county are found some interesting traces of the Mound Builders. "Flint Ridge," as it is called, is a number of miles in length and from one to two miles in breadth, and is extensively covered with flint and buhr-stone. Its features are decidedly mountainous and its mineralogical and geological features are promising; cannel coal, fire clay, bituminous coal, potters' clay, rock crystals, hornstone and iron, having been found to abound.

Upon this ridge had been excavated, at some period anterior to the first settlement of the country by civilized man, a large number of holes, possibly hundreds, which range in depth from 2 feet to 20 feet or more. Popularly they are known as wells, some of them having water in them.

Finally, the form of the works of the Mound Builders' epoch known as Enclosures are more or less numerous, and those near Newark are very extensive. One, five miles west of Newark, near the Alligator Hill, is large (enclosing many acres,) but the embankments are not high, though

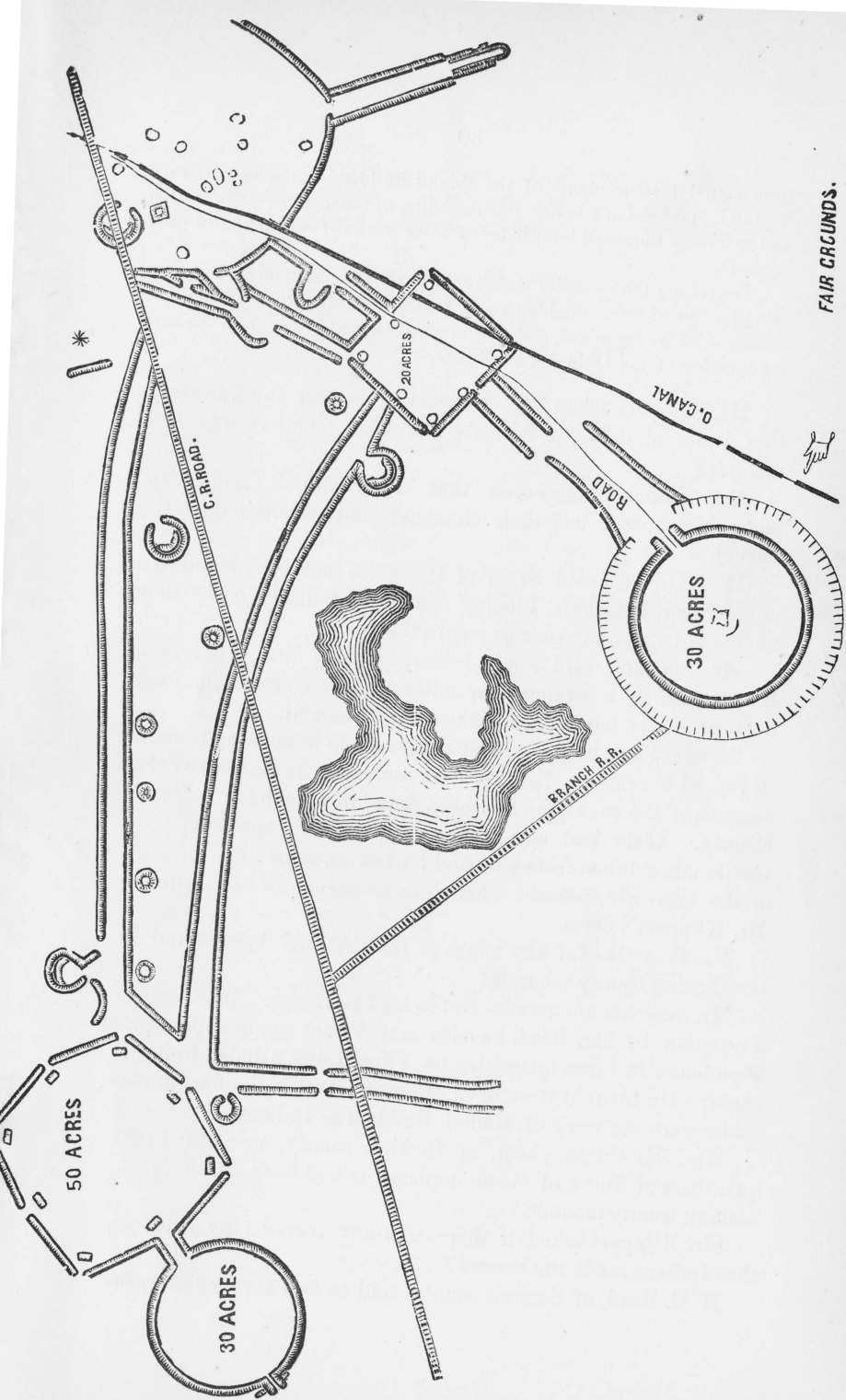
easily traceable, except a portion of it that has been leveled with the plow. Another, near the northern border of the county, is large with elaborate connections. One, six miles south-east of Newark, near the Tippet Mound, is an interesting work and well preserved. There are many others which, of course, cannot be described in detail. I will state, however, that there is an interesting one in the south-western part of the county, near the village of Pataskala.

Some of the enclosures are large, others small. They are of various heights, formed by banks of earth and stone, and are of all the common geometrical figures, and some of irregular forms not known to geometry. We have the circular, the elliptical and square enclosures; also parallelograms or oblong squares, hexagonals, half moons, open circles, and those of various other shapes. Some of them are called Sacred Enclosures, in which the Mound Builders were supposed to have performed their religious rites. Others are supposed to have been defensive military structures, and are called Forts. Still others are supposed to have been used exclusively for civic purposes, while still others are supposed to have been dedicated to the practice of their national games, or to the celebration of their national festivals.

Altogether, the most interesting, most elaborate of the Enclosure class of Mound Builders' works in Licking County, are those in the vicinity of Newark. The embankments forming them measure many miles in length, though probably nearly one-half of their length has been partially or wholly obliterated with the plow, they not being very high at first, except those of the two large circular enclosures, of 30 acres each, and of the octagonal which encloses 50 acres. The last named has been much defaced, indeed almost entirely obliterated in places, for the plow has been running over portions of it for nearly half a century. The embankments of the circular enclosure connected with the octagonal works are from five to ten feet high, except at one point where there was an observatory, and which is at least twenty feet high at present, and was built in part of stone. The other thirty acre enclosure is surrounded by an earth wall, ranging in height from fifteen to thirty feet. It has an opening of about one hundred feet in width, and there, on each side of it, the embankments are fully thirty feet high. This is the work formerly known as the Old Fort, now as the Fair Grounds. Its banks are higher than those of any Mound Builders' Enclosures hereabouts and perhaps elsewhere, and that fact has induced the belief with many that they enclosed the residence of their monarch—that here was in fact the seat of empire of the Mound Builders. The walls of this supposed seat of government are in a good state of preservation, the plow never having been permitted to pass over them. The enclosure is owned by the County Agricultural Society, who acquired title thereto upon the condition of its sole use for the purposes of said Society, and upon the further stipulation of the perpetual preservation of the embankments.

I herewith enclose for the Society that is to be, a drawing made





from actual measurements of the Mound Builders' works near Newark, hoping it may tend to a better understanding of the foregoing description, and to a more thorough knowledge of these works of our unknown predecessors.

Regretting the necessity which seems to have been upon me to extend this paper to an unreasonable length, I close, trusting that a successful Society will be organized, and that much good will result from the coming together of the Ohio Archæologists.

Mr. Klippart asked Mr. Smucker if he had any knowledge that bones of domestic animals had been found in sacrificial mounds?

Mr. Smucker answered that Prof. Marsh had found bones in mounds, but their character had not been definitely settled.

Mr. Klippart said bones of the horse had been found in a mound near Pataskala, Licking county, and destroyed by those who found them, in order to secure the teeth.

Mr. Smucker said he had knowledge of the discovery of horse teeth in a swamp four miles west of Newark, but knew nothing of any having been taken from a mound.

Messrs. Peet, Klippart, and others made interesting remarks in regard to remains discovered in mounds. It was stated that remains of the cave bear had been found in a mound in Delaware County. There had also been a well defined specimen of a textile fabric taken from a mound; likewise, some fibres of wood of the jack-oak species. There are specimens of the latter in Mr. Klippart's office.

Mr. Peet asked if any bones of the dog had been found in the Licking county mounds?

Mr. Smucker answered—Not to his knowledge. In answer to a question by Mr. Read, he also stated that stone implements were found in large quantities on Flint Ridge, alluded to in his paper. He thought it an open question whether the flint implements were the work of Mound Builders or Indians.

Wm. M. Cunningham, of Licking county, mentioned that quantities of flint and stone implements had been found in the Licking county mounds.

Mr. Klippart asked if there was any trustworthy evidence that Indians made the arrows?

M. C. Read, of Summit county, said he had a very fine spec-

imen of a glass arrow head, made by an Indian, under the eye of the party who donated it to him.

S. W. Miller, of Richland county, spoke of a similar circumstance that occurred under the observation of Dr. Geary, of Oregon.

J. P. Henderson, of Richland, asked if any copper axes, wedges or celts had been found in the Licking county mounds?

Mr. Smucker replied that he knew of none of the description named, though a number of copper heads had been found.

Mr. Peet had seen many specimens of copper implements taken from mounds in connection with arrow heads. He urged that measures be taken to preserve the mounds of our State.

W. B. Sloan, of Ottawa, gave an interesting account of a mound in Ottawa county, and exhibited specimens found there.

A. H. Agard, of Erie county, had seen a number of Skeletons near Santa Barbara, California, uncovered by the wind, buried in a peculiar manner, which he described.

Lecky Harper, of Knox county, made some interesting remarks in regard to mounds in Licking county. He moved that all the papers read here and the proceedings of this Convention be published in pamphlet form. Carried.

R. Brinkerhoff, from the Business Committee, announced that the Order of Business for to-morrow (Thursday, Sept. 2,) would be:

At 9 o'clock, A. M., organization of the State Archæological Association.

At 2 o'clock, P. M., general discussion on mounds and Mound Builders, and other archæological subjects, opened by M. C. Read, of Summit county.

Adjourned to 9 o'clock, A. M., to-morrow.

## SECOND DAY.

### MORNING SESSION.

THURSDAY, Sept. 2, 1875.

The Convention met in the library rooms pursuant to adjournment.

The minutes of the preceding meeting were read, corrected and adopted.

It was resolved also to amend the minutes, by enrolling the names of the members of the Convention at the head of the first day's proceedings.

R. Brinkerhoff, from the Committee on Constitution and By-Laws, presented a report, which, after full discussion, article by article, and amendment in various particulars, was adopted, as follows:

## CONSTITUTION.

ARTICLE 1. This Association shall be called THE STATE ARCHÆOLOGICAL ASSOCIATION OF OHIO.

ART. 2. The object of the Association shall be to promote investigation of the mounds and earthworks of the State, to collect facts, descriptions, relics, and other evidences of the pre-historic races, and to awaken an interest in the general subject of Archæology.

ART. 3. The officers of the Association shall consist of President, Vice Presidents, General Secretary, Recording Secretary, Librarian and Depositary, Treasurer, and a Board of Trustees, who shall be elected annually by ballot; the Trustees to be chosen from separate sections of the State.

ART. 4. The Library and Cabinet of the Association shall be in the Capitol, provided suitable accommodations be furnished therefor free of cost, and under the care of the Librarian and Depositary, who shall be a resident of the City of Columbus.

ART. 5. Regular meetings of the Association shall be held annually, and at such times and places as the Association may from year to year direct; provided, that no two successive meetings be held in the same place, except authorized by a two-thirds vote.

ART. 6. All Associations within the state having an archæological department or collection, may be auxiliaries of this; provided they furnish annually a list of their specimens, and a copy of their publications.

ART. 7. A yearly bulletin of the Association shall be issued and furnished free to all members not in arrears, and to all auxiliary Societies.

ART. 8. It shall be one duty of the General Secretary to correspond with the Collectors of relics, and with Institutions having collections, and to obtain, as far as possible, a list of their specimens; and duplicates, casts and photographs.

ART. 9. It shall be the duty of the Recording Secretary to keep a record of the proceedings, and to keep on file all such papers as may be presented to the Association.

ART. 10. Any person may become a member of this Association upon paying an initiation fee of three dollars, and be entitled to all the rights and privileges of the Association so long as he shall pay thereafter an annual fee of two dollars.

ART. 11. This Constitution may be amended at any annual meeting by a two-thirds vote of the members present; provided, such amendment be reported at the opening session of the annual meeting, and be referred to and reported upon by a special committee.

ART. 12. Such By-laws shall be adopted as may be deemed necessary; and such committees and regulations as are essential to the working of the Association, may be provided for in the By-laws.

## BY-LAWS.

1st. A Committee on Programme shall be appointed at each annual meeting for the following session.

2d. A Business Committee shall be appointed at an early stage of each annual meeting.

## Proceedings of the Association.

On motion of M. C. Read, the officers of this Convention were declared temporary officers of the State Association, under the organization as far as it had been perfected.

On motion of W. B. Sloan, the Secretary of the Convention was appointed temporary Treasurer of the Association to receive the initiatory fees of the members.

An intermission of ten minutes was then voted.

During the intermission the following named persons became members of the Association by enrolling their names and paying the initiatory fee:

Wm. B. Sloan.....	Port Clinton .....	Ottawa County.
G. S. B. Hempstead.....	Portsmouth .....	Scioto “
M. C. Read .....	Hudson .....	Summit “
R. Brinkerhoff .....	Mansfield .....	Richland “
O. N. Stoddard.....	Wooster .....	Wayne “
C. C. Baldwin.....	Cleveland .....	Cuyahoga “
T. W. Kinney.....	Portsmouth .....	Scioto “
N. S. Townshend.....	Columbus .....	Franklin “
Martin Hensel .....	“ .....	“ “
A. A. E. Taylor.....	Wooster .....	Wayne “
A. J. Erwin .....	Mansfield .....	Richland “
E. W. Dimmock .....	Dupont .....	Putnam “
Isaac Smucker .....	Newark .....	Licking “
Silas Courtright .....	Hooker's Station .....	Fairfield “
O. H. Booth .....	Mansfield.....	Richland “
J. P. Henderson.....	Newville .....	“ “
A. H. Agard.....	Sandusky.. ..	Erie “
S. D. Peet.....	Ashtabula .....	Ashtabula “
P. H. Clark .....	Ashland .....	Ashland “
S. W. Miller.....	Mansfield .....	Richland “

At the expiration of the intermission it was moved and carried that the temporary Secretary of the Association furnish the regular Secretary, when he shall have been elected, the minutes of the Convention and Association.



The Association then adjourned to meet at two o'clock, P. M., in the lecture room of the Methodist Episcopal Church, to carry out the regular order of business as reported by the Business Committee of the Convention.

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## AFTERNOON SESSION.

The Association met in the lecture room of the Methodist Episcopal Church.

The Secretary read the following letter, addressed to the Secretary of the Association :

MANSFIELD, O., Sept. 2, 1875.

DEAR SIR:—I send for distribution among the members of the Archaeological Society, some Reports on Fish and Fisheries, which, though not about the "Lost Race," may be interesting for the great benefit the propagation of fish is conferring on our race. I also send six copies of the Agricultural Report, for the benefit of any farmers in attendance on your Convention.

Very Truly Yours,

JOHN SHERMAN.

On motion the present was accepted, the thanks of the Association tendered to the Hon. Gentleman, and his letter ordered to be made a matter of record.

W. B. Sloan, from the Committee on Organization of the State Association, reported as follows:

PRESIDENT—R. Brinkerhoff, of Mansfield.

VICE PRESIDENTS—Chas. Whittlesey, of Cleveland; A. H. Agard, of Sandusky; John Sherman, of Mansfield; M. F. Force, of Cincinnati; G. S. B. Hempstead, of Portsmouth; J. S. Newberry, of Cleveland; E. B. Andrews, of Lancaster; Ed. Claypole, of Yellow Springs; D. H. Moore, of Cincinnati.

GENERAL SECRETARY—N. S. Townshend, of Columbus.

RECORDING SECRETARY—O. H. Booth, of Mansfield.

TREASURER—M. Hensel, of Columbus.

LIBRARIAN AND DEPOSITARY—J. H. Klippart, of Columbus.

TRUSTEES—A. A. E. Taylor, of Wooster; Wm. B. Sloan, of Port Clinton; S. D. Peet, of Ashtabula; Isaac Smucker, of Newark; T. W. Kinney, of Portsmouth; C. C. Baldwin, of Cleveland; M. C. Read, of Hudson; Ed. Orton, of Columbus; C. T. Sherman, of Cleveland; Joseph S. Cox, of Cincinnati.

It was moved and carried that W. B. Sloan be empowered to cast the unanimous vote, by ballot, of the Association, for the names reported by the Committee.

Mr. Sloan then advanced to the Secretary's desk, and by virtue of the authority vested in him by the unanimous voice of the Association, deposited the report of the Committee on Organization, as the ballot of the Association.

President Taylor then called the President elect, R. Brinkerhoff, to the Chair, the latter assumed its duties with an appropriate speech.

Mr. Peet offered the following resolutions, which were adopted, viz :

*Resolved*, That this Association recommend the calling of a general Convention of the Archæologists of the whole country, with the design of forming an Archæological Congress of America.

*Resolved*, That a Committee be appointed to correspond with the prominent Archæologists of the United States and the Canadas, and to secure their names as signatures to the call.

*Resolved*, That the meeting of this Convention be held during the Centennial year, in the city of Philadelphia, at such time and place as the Committee may designate.

*Resolved*, That the expenses of issuing this call and of the preliminary arrangements for the meeting, be paid by this Association.

The Committee called for by the Resolutions was appointed by the President, as follows :

S. D. Peet, of Ashtabula county ;  
 Wm. B. Sloan, of Ottawa county ;  
 A. A. E. Taylor, of Wayne county ;  
 M. C. Read, of Summit county ;  
 N. S. Townshend, of Franklin county.

W. B. Sloan offered the following resolution, which was adopted :

*Resolved*, That the Trustees shall have power to hold such meetings, and at such times and places, as, in their judgment, the interest of the Association may demand.

A. A. E. Taylor offered the following resolution, which was adopted :

*Resolved*, That the Trustees be instructed to take the necessary action to secure the legal incorporation of the Association.

A. A. E. Taylor also offered the following resolution, which was adopted :

*Resolved*, That the General Secretary be requested to correspond with persons in the State interested in American Archæology, and solicit them to become members of this Association.

A. A. E. Taylor also offered the following resolution, which was adopted :

*Resolved*, That a Committee composed of the Recording Secretary, General Secretary, Treasurer, Librarian and Depositary, be appointed to superintend the publication and distribution of the Minutes of the Convention and Association.

By request of the President, J. E. Wharton read a number of letters from eminent Archæologists throughout the country, approving the objects of the Convention.

W. B. Sloan offered the following resolution, in the absence of any By-Law on the subject, which was carried :

*Resolved*, That special meetings of this Association may be called by the President and Trustees at such times and places as in their judgment may seem advisable.

It was decided that the first annual meeting of the Association be held in Newark, on the first Tuesday in September, 1876.

The President then announced that the regular order of exercises for the afternoon was a discussion of Mounds and Mound Builders.

W. B. Sloan regretted that an early train on which he was obliged to leave, made it impossible for him to engage in and listen to the discussion, as he had intended and promised. The drawings he had proposed to exhibit, in illustration of what he had intended to say, he would, however, send by mail to the Secretary.

Professor M. C. Read, of Summit county, then delivered an address upon

## SOME CURIOUS WORKS IN THE NORTHERN PART OF SUMMIT COUNTY, OHIO.

Furnace Run is a small stream, coming from the west and emptying into the Cuyahoga near the south line of Boston township, in Summit county. The alluvial bottom of the Cuyahoga is here about one-half a mile wide, and that of Furnace Run about one-fourth of a mile. Neither were measured.

On the south side of Furnace Run a peculiarly shaped projection of the drift clay hills extends into the valley of the Cuyahoga. The terminus exhibits a level surface 66 feet above the valley, of an ovoid form, 66 by 275 feet. The surface has, apparently, been artificially leveled. At one point is an old footpath leading down the slope to an old channel of Furnace Run, while at other places the slope is so steep as to render the surface practically inaccessible. Going toward the clay hills of the west, this level surface narrows to a mere footpath, which, with a winding and undulating course, extends for a distance of 249 feet, when it rapidly expands, so that at 225 feet from this point it has a width of 204 feet; from thence sloping to a somewhat lower level. There a ditch 204 feet long was carried across the hill—8 to 10 feet wide, and 4 to 5 feet deep—with the embankment outside about the width of the ditch, and apparently composed simply of the material excavated. Both these level surfaces have scattered over them, without regularity, the circular wells or excavations which are so often found in such places. An old and mixed forest covers the surface.

On the opposite side of Furnace Run a smaller projection of the clay hills extends directly into the valley, opposite the extremity of the enclosure on the south side. A road passing over this spur isolated it from the rest of the high land; and, in harmony with the economic characteristics of some parts of the Western Reserve, as the knob was worthless for other uses, it was chosen as a site for a school house. Its appropriation for this use required that it should be graded down about 6 feet. This improved the road, made a very pretty site for a school house, and disclosed archæological treasures of no small value.

The excavation was substantially completed before I had notice of the discoveries made; but, as soon as they were reported, I visited the place, found the men still engaged in the work, and very careful inquiries disclosed the following facts, which may be regarded as substantially correct.

A six-sided stone enclosure was discovered, constructed of large, rough rocks, each side about two rods in length and nearly six feet high, all covered with the drift clay soil of the hill, and not by the slow accumulation of vegetable detritus. For whatever purpose the structure was erected, it was filled and covered by the builders with earth. In the interior, and on a level with the base of the wall, were ashes, charcoal, and a few

small fragments of bones, so friable that they could not be preserved. A small fragment I regarded as from a human skull.

On the same level, and within the enclosure, various articles were turned out by the plow and collected as the earth was removed; the precise manner in which they were deposited not being apparent. The following is a list and description of these articles:—

1. A copper adze,  $5\frac{1}{2}$  inches long, 3 1-16 inches wide at the edge, and at the head,  $1\frac{3}{4}$  inches. It and the other metal implements were apparently of native copper and formed by hammering.

2. A copper chisel or hatchet,  $3\frac{1}{2}$  inches long, 2 inches wide at the cutting edge, and  $1\frac{3}{4}$  at the head; only  $\frac{1}{8}$  of an inch thick at the middle.

3. A copper awl or bodkin about 3 inches long.

4. One stone pipe, accurately but plainly wrought.

5. A peculiar stone implement, thin, flat, 4 3-10 inches long, 1 1-10 wide at one end and 1 7-10 at the other; with a smoothly drilled, round hole in the center.

6. Two stone implements, each of the form nearly of two truncated cones, placed base to base;  $5\frac{1}{2}$  inches long,  $1\frac{1}{2}$  inches in diameter at the center, and 4-5 of an inch at each end. These were carefully wrought, symmetrically formed, but not polished, showing scratches, as if scraped down with grit stones.

7. Eight or ten thin stones, 6 inches long, 1 7-10 inches wide at the center, diminishing slightly in width at each end, shaped much like scythe whetstones.

8. Many sheets of mica, 3 to 6 inches wide, and 6 to 10 inches long.

9. A piece of galena, about 2 inches in diameter, which had one of its surfaces covered with irregular scratches, as if rubbed upon sharp grit rock.\*

The knob was covered with the stumps of oak trees, 3 feet or more in diameter.

Without speculating as to the nature of the structure, whether it was a mere depository of treasures, or a sepulchral deposit, the articles found indicate that the builders gathered their treasures from very widely separated places; copper from Lake Superior, galena probably from north-western Illinois, and the mica probably from North Carolina.

"Fortifications," of substantially this nature, are very common in Ohio, and are usually regarded as erected entirely for defense, indicating a people pushed to extremities by an enemy of overpowering numbers. It should be noted, however, that they are frequently very small. This one, for instance, would be fully manned by a mere handful of men. They are also very common and are generally peculiarly situated with reference to the surrounding country; as in this case, they ordinarily overlook a greater or less expanse of alluvial land, fitted for the production of that peculiarly American grain—Indian Corn. A similar enclos-

\*The most valuable of these articles are deposited in the State Cabinet at Columbus, Ohio.

ure on a high, rocky point, at the junction of Payne's Creek with Grand River, in Geauga county, is 150 feet above the river, the walls enclose a much larger area and the "Camp" overlooks a much larger alluvial plain. On the Pymatuning Creek, in Wayne township, Ashtabula county, a circular enclosure has the same relation to a very fine body of alluvial land, but there is no spur in the neighborhood similar to the other two mentioned above. The enclosure is upon a gentle rise not of sufficient elevation to constitute a look-out station, and some little distance from it an artificial conical mound is raised to a height sufficient to enable a person upon its top to command a full view of the valley, even if filled with growing corn. A larger and precisely similar work I have examined on the banks of the Shenango, in Pennsylvania.

It seems to me we must look for an explanation of these works to the ordinary daily life of the builders, rather than to the exceptional condition of a state of war. An agricultural people, in a wooded district and without iron, would be engaged in a ceaseless and unequal warfare with nature; and it is very doubtful whether agricultural pursuits have ever been adopted or have been long practiced by man not having the use of iron, except in comparatively rainless regions. The primitive mode of agriculture was by irrigation. Without sharp cutting instruments it is possible for man to construct long ditches to irrigate arid, treeless land; it is not easy for him to wage a successful warfare against luxuriant forests.

The American Indians are not, properly speaking, an agricultural people. The business of the man is hunting and war.

If the occupants of these enclosures cultivated the soil, they would find the alluvial lands the best fitted for their use. The roots of the scattered trees are deeply buried beneath the surface. The trees with little undergrowth could be girdled or killed by fire. But their fields could not be fenced. They were constantly exposed to the attacks of herbivorous animals, and the owners were also exposed to the attacks of predaceous animals. Enclosures such as these would be the best devices possible for their protection and the protection of their fields, which must be at all times under the eye of an observer, to avoid the risk of their destruction. With no other enemies, without iron and with no domestic animals, the struggle for the means of subsistence from agricultural products *alone* would be a difficult one. If in addition they were surrounded with hostile, hunting tribes, the struggle would be hopeless; their disappearance or the abandonment of agriculture inevitable. Without seeking to reach at this time positive conclusions, I wish to propose the query whether these enclosures did not pertain to the ordinary daily life of this extinct people, constructed as protected points of observation, from which to watch the growing crops which constituted all their wealth; to protect their huts from the intrusion of wild beasts; and serving also as a protection against the attack of more formidable enemies, but not constructed exclusively for this latter use. As helps to the solu-



tion of this and other questions, I wish to urge upon all the members of this Association, that in making examinations of these works, they should not content themselves with a description of them and of the remains found in them, however interesting, but should also take note of the topography of the section in which they are situated, in all its bearings and relations to the works.

NOTE.—The address was illustrated by drawings upon the blackboard, that cannot be reproduced here.

C. C. Baldwin, after drawing out by questions, some important information, spoke further on the subject.

John S. B. Matson spoke of a Mound opened in Hardin county, in which three hundred skeletons were found.

O. N. Stoddard followed, giving interesting accounts of Mound Builders and their habits. He enlarged upon the petrified stumps of Colorado, near Pike's Peak.

A. A. E. Taylor gave an account of some human remains, found near Marion, of this State.

N. S. Townshend said that in preparing the Agricultural College grounds in Columbus, a large quantity of relics were found, some thirty in number, consisting of arrow-heads, etc. There were no mounds there.

E. W. Dimmock spoke about archæological remains in the Maumee Valley, and exhibited interesting specimens. He mentioned the finding of half a bushel of pottery in a Putnam County Mound.

G. W. Van Vleck also interested the Association with a short account of some relics found in Huron County.

The President, in urging upon the members the duty of gathering pre-historic remains, mentioned, in illustration of the ease with which relics may be found, the experience of T. C. Bushnell, of Ashland county, who, upon his attention being called to the subject, walked leisurely home, a short distance, scanning the objects in his path. The result was, that he found three fine specimens of stone hammers. The relics of by-gone ages lie scattered in profusion at our feet wherever we go, and we have only to stoop and pick them up.

After passing a vote of thanks to the citizens for their kindness and courtesy, and to the Librarian of the Public Library, and the Methodist Episcopal Church, for the use of the rooms in

which to hold the sessions of the Convention, the Association adjourned to meet at the time and place mentioned in the proceedings.

The President, in announcing the final adjournment, congratulated the Association on the marked success of the initiatory meeting, and the flattering prospects, under which the members separated, for the future growth and usefulness of the organization here perfected.

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DEPARTMENT OF THE INTERIOR.  
UNITED STATES GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.  
F. V. HAYDEN, U. S. Geologist-in-Charge.

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I.—A NOTICE OF THE ANCIENT REMAINS OF SOUTHWESTERN  
COLORADO EXAMINED DURING THE SUMMER OF 1875.

By W. H. HOLMES.

II.—A NOTICE OF THE ANCIENT RUINS IN ARIZONA AND UTAH  
LYING ABOUT THE RIO SAN JUAN.

By W. H. JACKSON.

III.—THE HUMAN REMAINS FOUND NEAR THE ANCIENT RUINS  
OF SOUTHWESTERN COLORADO AND NEW MEXICO.

By Dr. EMIL BESSELS.

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EXTRACTED FROM BULLETIN OF THE GEOLOGICAL AND GEOGRAPHICAL SURVEY  
OF THE TERRITORIES, VOL. II, NO. I.

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WASHINGTON, March 21, 1876.



# A NOTICE OF THE ANCIENT RUINS OF SOUTHWESTERN COLORADO, EXAMINED DURING THE SUMMER OF 1875.

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BY W. H. HOLMES.

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In addition to my duties as geologist to the southwest or San Juan division of the survey for 1875, I was assigned the very agreeable task of making examinations of such ancient remains as might be included in the district surveyed.

Much information had already been given to the public in relation to the ruins of Southwestern Colorado by Mr. Jackson, who paid them a short visit in 1874, and many similar remains had been described by early explorers in New Mexico and Arizona, but nothing like a complete survey of this particular region had been made.

The district examined by our party covers an area of nearly 6,000 square miles, chiefly in Colorado, but including narrow belts in the adjacent Territories of New Mexico, Utah, and Arizona. It lies wholly on the Pacific slope, and belongs almost entirely to the drainage-system of the Rio San Juan, a tributary of the Colorado of the West.

Lying along the west base of the mountains is a comparatively flat country, the eastern border of the great plateau-region that reaches westward toward the Sierras. The surface-geology is chiefly Cretaceous, and the various large streams formed on the west slope of the Rocky Mountains have cut long cañoned valleys down through the nearly horizontal beds. In the greater part of this region, there is little moisture apart from these streams, and, as a consequence, vegetation is very sparse, and the general aspect of the country is that of a semi-desert. Yet there is bountiful evidence that at one time it supported a numerous population; there is scarcely a square mile in the 6,000 examined that would not furnish evidence of occupation by a race totally distinct from the nomadic savages who hold it now, and in every way superior to them.

At first, it seems strange that a country so dry and apparently barren could support even a moderate population, and it is consequently argued that the climate has grown less moist since the ancient occupation. Be this as it may, I observe the fact that the great bulk of remains are on, or in the immediate neighborhood of, running streams, or by springs that furnish a plentiful supply of water during the greater part of the year. The ever-present pottery may in many cases have been broken and left by hunting and wandering parties, and the remnants of dwellings far out from water may be but temporary abodes used only in the winter or during rainy seasons.

I also notice that the country is by no means an entire desert. All along the stream-courses there are grass-covered meadows and broad belts of alluvial bottom, affording, if properly utilized, a considerable area of rich, tillable land.

The ruins of this region, like most others of the extreme West and South, are the remnants in a great measure of stone structures. To

what extent wood and adobe were used can hardly be determined. It is evident, however, that the greater portion of the villages and dwellings of the lowlands have been of material other than stone, frequently doubtless of rubble and adobe combined.

As to situation, they may be classified very properly under three heads: (1) lowland or agricultural settlements; (2) cave-dwellings; and (3) cliff-houses or fortresses.

Those of the first class are chiefly on the river-bottoms, in close proximity to water, in the very midst of the most fertile lands, and located without reference to security or means of defense.

Those of the second are in the vicinity of agricultural lands, but built in excavations in low-bluff faces of the Middle Cretaceous shales. The sites are chosen also, I imagine, with reference to security; while the situation of the cliff-houses is chosen totally with reference to security and defense, built high up in the steep and inaccessible cliffs, and having the least possible degree of convenience to field or water.

As to use, the position for the most part determines that. The lowland ruins are the remains of agricultural settlements, built and occupied much as similar villages and dwellings would be occupied by peaceable and unmolested peoples of to-day. The cave-dwellers, although they may have been of the same tribe and contemporaneous, probably built with reference to their peaceable occupations as well as to defense, and it is impossible to say whether or not they made these houses their constant dwelling-places. The cliff-houses could only have been used as places of refuge and defense. During seasons of invasion and war, families were probably sent to them for security, while the warriors defended their property or went forth to battle; and one can readily imagine that when the hour of total defeat came, they served as a last resort for a desperate and disheartened people.

In form, the parallelogram and circle predominate, and a considerable degree of architectural skill is displayed. Where the conformation of the ground permits, the squares are *perfect* squares and the circles *perfect* circles. A greater part of the ordinary structures are square or rectangular; while attached to each group, and sometimes without indications of contiguous buildings, are the circular ruins frequently resembling towers. These are the most pretentious structures, being often as much as forty feet in diameter, and in many cases having double or triple walls. They are solidly built of hewn stone, dressed on the outside to the curve, neatly jointed, and laid in mortar.

The space between the outer walls is invariably divided by heavy partition-walls into a number of apartments, while a circular depression, or *estufa*\*, occupies the center of the inclosure.

It seems evident, from the extraordinary form of these structures and the unusual care shown in their construction, that they were not designed for the ordinary uses of dwelling or defense. It has been observed that, among nearly all the ancient tribes of North America, the grandest and most elaborate works of art were the offspring of their superstitions, and it does not seem at all improbable that these great towers had a religious origin.

It is stated that the eternal fire—an essential of their worship—has always been kept in circular inclosures, and that the circle symbolizes the sun, their deity. The occurrence, therefore, of one or more of these circular inclosures in each of their settlements can be rationally accounted for; but it is with less certainty we arrive at conclusions in regard to the triple walls and the cell-like apartments. In the inhabited

\* A Spanish word signifying "sweat-house" or council-house.



pueblos of to-day, there are underground rooms, mostly circular, used as council-chambers as well as for the performance of the mysterious rites of their religion. Similar chambers occur, according to Lieutenant Simpson, in all the ruined cities of New Mexico, but having single walls of no great height or thickness. It is stated by Squier and Davis\* that in Mexico the sacred inclosures were also used for defensive purposes, and it certainly seems probable that these curious structures served the double purpose of temples and fortifications, and that the apartments between the walls were the cells of the priesthood or the receptacles of sacred or valuable property.

The smaller single-walled towers, which are scattered at intervals along the river-courses and cañons, frequently in commanding situations, were probably watch or signal towers.

The cave-dwellings are made by digging irregular cavities in the faces of bluffs and cliffs formed of friable rock, and then walling up the front, leaving only a small doorway for entrance and an occasional small window at the side or top.

The cliff-houses conform in shape to the floor of the niche or shelf on which they are built. They are of firm, neat masonry, and the manner in which they are attached or cemented to the cliffs is simply marvelous. Their construction has cost a great deal of labor, the rock and mortar of which they are built having been brought for hundreds of feet up the most precipitous places. They have a much more modern look than the valley and cave remains, and are probably in general more recent, belonging rather to the close than to the earlier parts of a long period of occupation. Their position, however, has secured them in a great measure from the hand of the invader as well as from the ordinary effects of age.

Of works of art other than architectural that might assist in throwing light upon the grade of civilization reached by these people, but meager discoveries were made; although I imagine that careful search and well-conducted exhumation might develop many things of great interest. A small number of arrow-heads, stone-implements, ornaments, and articles of fictile manufacture, that may fairly be attributed to the age of the cliff-builders, were collected. The greater part of these are figured in plates XIII and XIV. There are no evidences whatever that metals were used.

Numerous hieroglyphics were observed, both engraved and painted upon the cliffs. Drawings of a large number were made, and some of the more notable examples are given in plates XI and XII.

A great number of burial-places were noted, but of the graves examined few yielded further evidences of occupation than small quantities of charcoal and bits of painted pottery. These burial-places, which are in a number of cases covered by a heavy growth of full-grown piñon pines and cedars, are usually found on the summits of high ridges and promontories, and are still marked by slabs of sandstone set on edge and arranged in circles, and parallelograms of greatly-varying dimensions. But that they did not always bury their dead in high places is proven by the frequent discovery of human remains in the arroyos or deep washes in the valleys. Three skeletons were obtained, in the vicinity of ruined villages, from the sides of recent washes.

The accompanying plates are, with one exception, reproductions of pen-drawings, and are arranged for convenience, rather than from any method of classification. The plans are not drawn to a uniform scale, because of the inconvenience of such an arrangement; but measure-

\* Ancient Monuments of the Mississippi Valley, page 102.

ments are so frequently given on the plates themselves that no confusion need occur. Measurements were taken by tape-line in all the more important structures; but in many of the ordinary ruins, where exact dimensions were not considered essential, the distances were estimated. It is to be greatly regretted that extreme haste frequently prevented close and accurate work.

The accompanying map will give the location of all the more important groups of ruins.

The fragments of information collected in this notice are given with the hope that they may throw a little additional light upon the very interesting problems of ancient American history.

#### RUINED VILLAGE ON THE RIO LA PLATA.

##### Plate I.

The first group of ruins observed is situated on the Rio La Plata, about twenty-five miles above its junction with the San Juan, and three or four miles south of the New Mexican line. It is doubtless the remains of a large, irregular village, and stands on a low terrace, some 20 feet above the river-bed, and near the center of a large, fertile valley.

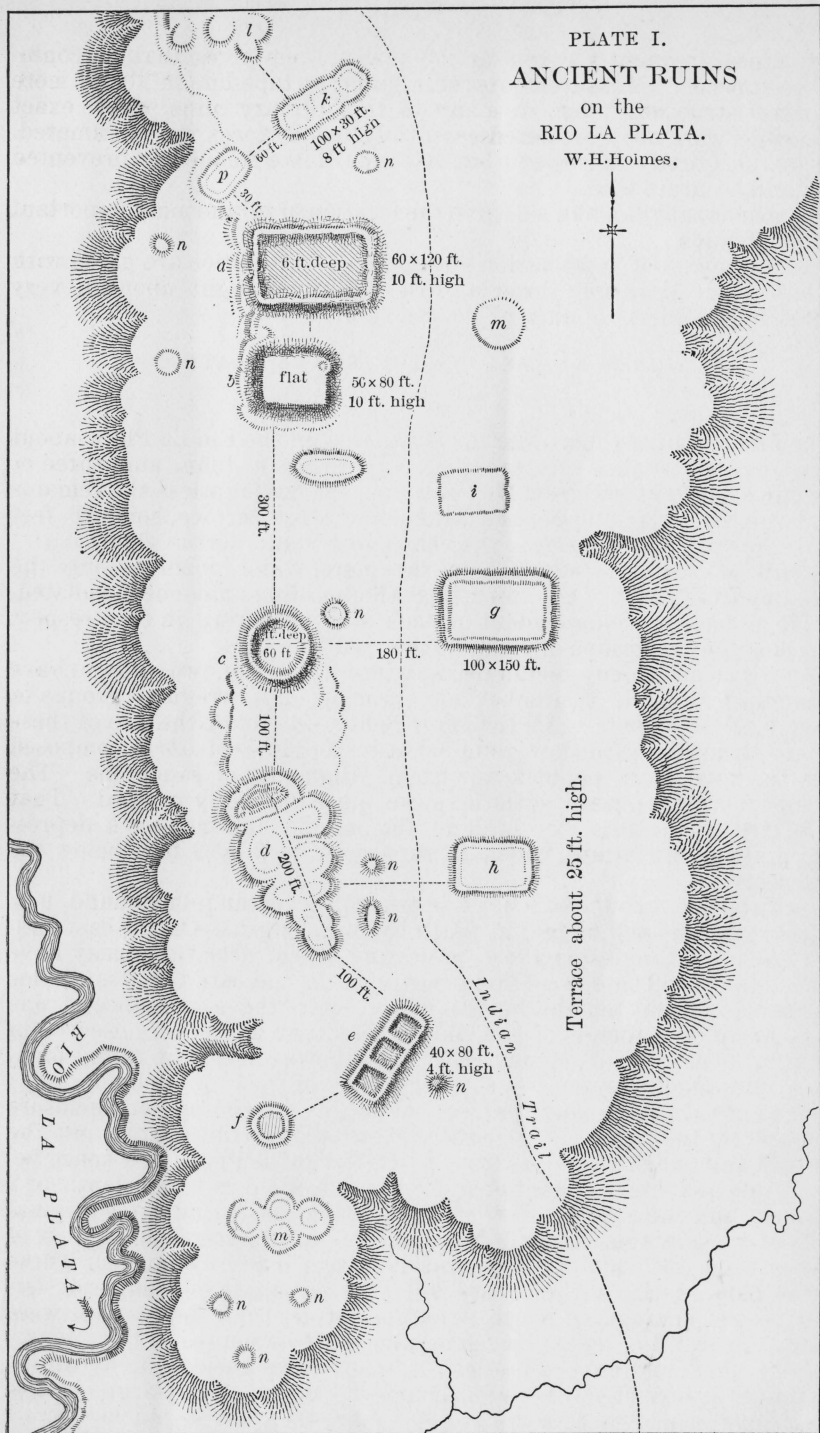
It will be seen, by reference to the plate, which includes only the more important part of the town, that the buildings have been isolated, and, in a measure, independent of each other, differing in this respect from most of the groups of ruins farther south.

The forms are chiefly rectangles and circles; one or two seem to have been elliptical, while a number have consisted of irregular groups or clusters of apartments. All that now remains to mark the site of these ancient structures is the low, rounded heaps and lines of *débris*, composed of earth, water-worn pebbles, and small fragments of sandstone. The walls of four of the main structures are quite distinctly marked. That of the circle *c* is still 4 feet high on the outside, and incloses a depression, probably an *estufa*, which, in the center, is 2 or 3 feet below the terrace-level.

North of this, about 300 feet, is a truncated rectangular mound, 9 or 10 feet in height and 50 feet in width by 80 in length. On the east end, near one of the angles, is a low, projecting pile of *débris* that may have been a tower. There is nothing whatever to indicate the use of this structure. Its flat top and height give it more the appearance of one of the sacrificial mounds of the Ohio Valley than any other observed in this part of the West. It may have been, however, only a raised foundation, designed to support a superstructure of wood or adobe.

North of this again, and 100 feet distant, is a rectangular inclosure about 60 by 100 feet. It is slightly excavated in the center, and the rounded and irregular wall is from 4 to 6 feet in height. The space between this and the last-mentioned structure is filled in to the depth of 2 or 3 feet, and the amount of *débris* about their bases indicates original walls of considerable height. North of this are scattered a number of inferior ruins, the walls of which are not always distinctly marked. These extend back toward a row of low hills, the remnants of a superior terrace, on the summits of which a number of artificial depressions were found. Such "dug holes" are generally quite numerous in the vicinity of these ruins, and have doubtless in many cases been made by throwing up earthworks for defensive purposes. South of the large circle is a mass of ruins covering some 15,000 square feet, but so much reduced that nothing further could be determined than the fact that it had contained a large number of irregular apartments. Next to this is a rect-

PLATE I.  
 ANCIENT RUINS  
 on the  
 RIO LA PLATA.  
 W.H. Hoimes.





angular ruin, containing three well-marked apartments. Its walls are 6 or 7 feet high, and, unlike those of the preceding examples, do not coincide with the cardinal points. South of this, and occupying the extreme southern end of the terrace, are a number of small circles and mounds, while an undetermined number of diminutive mounds are distributed among the other ruins.

To the east of the Indian trail, as shown in the plate, are a number of inclosures of lesser importance, which, from want of time, were not closely examined.

Nowhere about these ruins are there any considerable indications of defensive works, and the village, which is scattered over an area fully two miles in circuit, has no natural advantages whatever. Neither are there traces of ditches, nor of anything that might throw important light upon the habits or occupations of the people. A few arrow-heads and minute cutting-implements were picked up. Countless chips of jasper, obsidian, and flint were scattered around, and the soil was literally full of fragments of painted and ornamental pottery.

On the opposite side of the river, and at intervals above and below, are isolated groups of ruins and heaps of *débris*—certainly the remains of dwellings. These seem to have been distributed very much as dwelling-houses would be in the rural districts of civilized and peaceable communities.

It is possible that there are undiscovered ruins on this stream equally important with that described; for, in pursuing my geologic investigations, I was compelled to take a long detour to the westward from this point, returning to the La Plata again a few miles above its junction with the San Juan. On this occasion, while riding through a desert-like locality, quite naked and barren, much resembling the well-known *Mauvaises terres*, I was surprised to observe fragments of pottery strewn around, and presently a number of ruins, in a very reduced state and almost covered by the drifting sand, and this six or eight miles from water. On the high, dry table-lands, on all sides, fragments of pottery were picked up. What could have induced people to build and dwell in such a locality it is useless to surmise.

#### GROUP OF CAVE DWELLINGS AND TOWERS ON THE RIO SAN JUAN.

##### Plate II.

On the San Juan River, about thirty-five miles below the mouth of the La Plata and ten miles above the Mancos, occurs the group of ruins figured in Plate II.

The river is bordered here by low lines of bluffs formed from the more compact portions of the Middle Cretaceous shales. At this particular place, the vertical-bluff face is from 35 to 40 feet in height.

I observed, in approaching from above, that a ruined tower stood near the brink of the cliff, at a point where it curves outward toward the river, and in studying it with my glass detected a number of cave-like openings in the cliff-face about half-way up. On examination, I found them to have been shaped by the hand of man, but so weathered out and changed by the slow process of atmospheric erosion that the evidences of art were almost obliterated.

The openings are arched irregularly above, and generally quite shallow, being governed very much in contour and depth by the quality of the rock. The work of excavation has not been an extremely great



one, even with the imperfect implements that must have been used, as the shale is for the most part soft and friable.

A hard stratum served as a floor, and projecting in many places made a narrow platform by which the inhabitants were enabled to pass along from one house to another.

Small fragments of mortar still adhered to the firmer parts of the walls, from which it is inferred that they were at one time plastered. It is also extremely probable that they were walled up in front and furnished with doors and windows, yet no fragment of wall has been preserved. Indeed, so great has been the erosion that many of the caves have been almost obliterated, and are now not deep enough to give shelter to a bird or bat.

This circumstance should be considered in reference to its bearing upon the question of antiquity. If we suppose the recess to be destroyed is six feet deep, the entire cliff must recede that number of feet in order to accomplish it. If the rock were all of the friable quality of the middle part, this would indeed be the matter of a very few decades; but it should be remembered that the upper third of the cliff-face is composed of beds of comparatively hard rocks, sandstones, and indurated shales. It should also be noted still further that at the base of the cliff there is an almost total absence of *débris*, or fallen rock, or even of an ordinary talus of earth, so that the period that has elapsed since these houses were deserted must equal the time taken to undermine and break down the 6 feet of solid rock, plus the time required to reduce this mass of rock to dust; considering also that the erosive agents are here unusually weak, the resulting period would certainly not be inconsiderable.

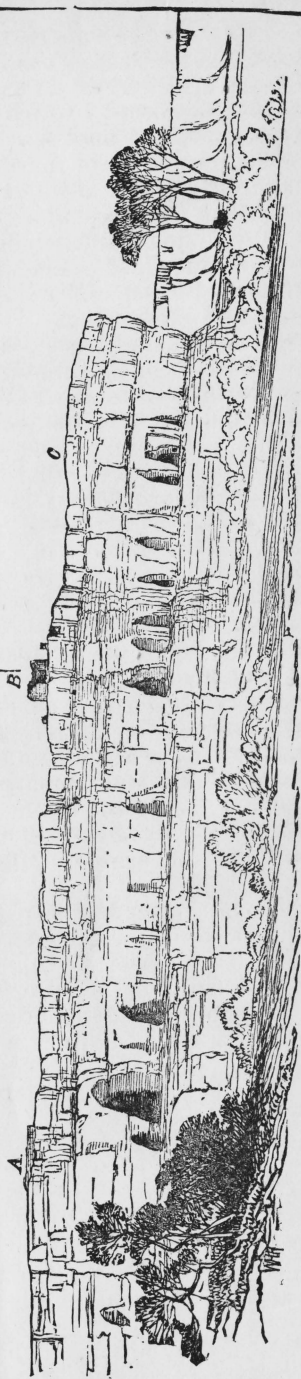
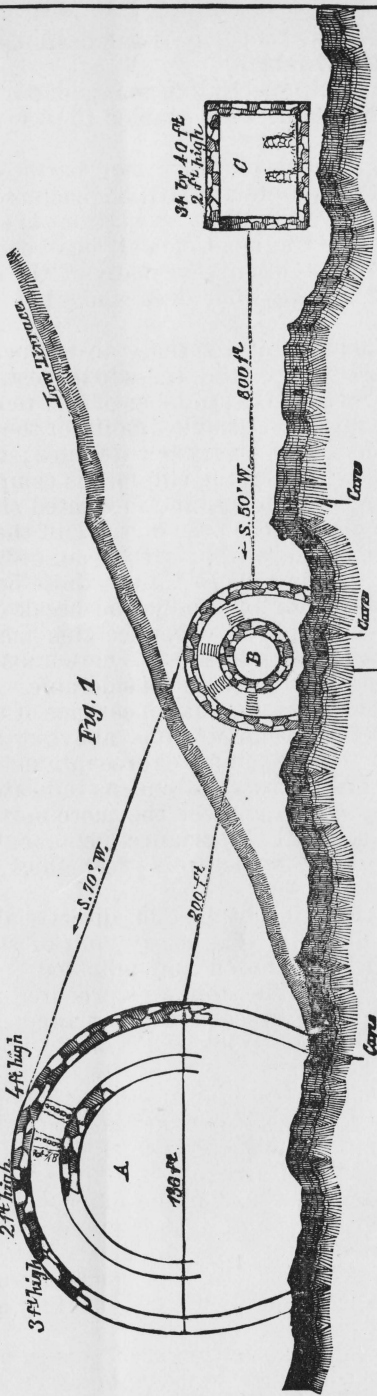
Figure 2 gives a fair representation of the present appearance of these dwellings, while their relations to the group of ruins above will be understood by reference to figure 1. These ruins are three in number—one rectangular and two circular. The rectangular one, as indicated in the plan C, is placed on the edge of the mesa, over the more northern group of cave-dwellings; it is not of great importance, being only 34 by 40 feet, and scarcely 2 feet high; the walls are  $1\frac{1}{2}$  feet thick, and built of stone.

The small tower B is situated on the brink of the cliff, directly above one of the principal groups of cave-houses. It is neatly built of stone, which, although not hewn, is so carefully chosen and adjusted to the curve that the wall is quite regular. That the stone was procured from the neighboring cliffs is indicated by the presence of great numbers of characteristic fossils. The wall is 18 inches thick and from 2 to 6 feet in height.

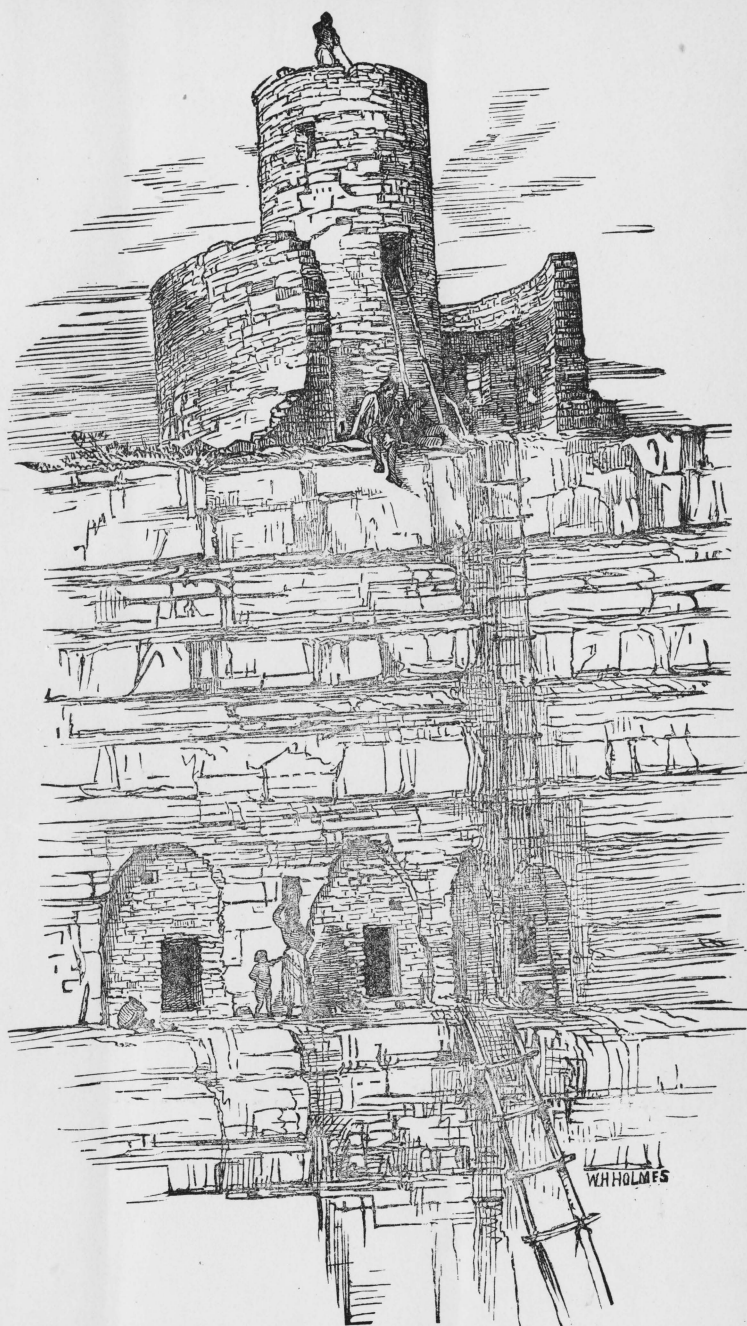
Long lines of *débris*, radiating from all sides, indicate that it has been much higher, and has but recently fallen. This tower is inclosed by a wall, also circular in form, but open toward the cliff, as seen in the drawing; the ends projecting forward and irregular and broken as if portions had fallen. Its construction is like that of the inner wall, but the height is not more than 3 feet at any point. The diameter of the inner circle is 12 feet, that of the outer 22 feet; the distance, therefore, between the walls is a little less than 4 feet. In this space, there are indications of partition-walls that have originally divided it into a number of apartments.

About one hundred and fifty yards to the southwest of this ruin are the remains of another similar structure. It has been, however, on a much grander scale. The walls are 26 inches thick, and indicate a diameter in the outer wall of about 140 feet. They are not above 4 feet high at any point, and in the parts toward the cliff can only be traced











by a low ridge of earth. The remaining fragments of wall are at the remoter parts of the circles, and are in every respect like the walls already described. The inner wall, which can be traced but a short distance, is  $8\frac{1}{2}$  feet from the outer, and has been connected by partition-walls, as in the other case.

The first impression given by this curious inclosure is that it was designed for a "corral," and used for the protection of herds of domestic animals; but since these people are not known to have possessed domestic animals, and when we further consider that inclosures of pickets would have served this purpose as well as such a massive and extraordinary structure, we can hardly avoid assigning it to some other use, which use, doubtless similar to that of the smaller tower, is very naturally suggested by its location and construction.

That they both belonged to the community of cave-dwellers, and served as their fortresses, council-chambers, and places of worship, would seem to be natural and reasonable inferences. Being on the border of a low mesa country that rises toward the north, the strong outside walls were doubtless found necessary to prevent incursions from that direction, while the little community by means of ladders would be free to pass from dwelling to temple and fortress without danger of molestation.

The original height of these structures must necessarily be a matter of conjecture, and it is true that although there is every evidence of age, both in the cave-dwellings and in the walled inclosures above, the lack of great quantities of crumbling walls and *débris*, and the general bareness of the ruins, give rise to the notion that they were but meager affairs. If we conclude, however, that the outer walls were constructed for defense, and their thickness and form favor such a hypothesis, their height would probably have been as great as fifteen or twenty feet, while the inner walls, being equally heavy and well built, would be sufficiently high to accommodate two or three stories. With these conclusions in view, I have ventured to present a sketch showing a restoration of the smaller tower (plate III). This sketch illustrates the probable appearance of the dwellings and tower, and the supposed means of communication between them.

The manner of walling up the fronts of the cave-dwellings, as here given, was observed frequently on the Rio Mancos, where, in corresponding cliffs of shaly sandstones, there are many well-preserved specimens. A large group situated on this stream, about ten miles above its mouth, was subsequently examined. The walls were in many places quite well preserved and new-looking, while all about, high and low, were others in all stages of decay. In one place in particular, a picturesque outstanding promontory has been full of dwellings, literally honeycombed by this earth-burrowing race, and as one from below views the ragged, window-pierced crags, he is unconsciously led to wonder if they are not the ruins of some ancient castle, behind whose moldering walls are hidden the dread secrets of a long-forgotten people; but a nearer approach quickly dispels such fancies, for the windows prove to be only the doorways to shallow and irregular apartments, hardly sufficiently commodious for a race of pigmies. Neither the outer openings nor the apertures that communicate between the caves are large enough to allow a person of large stature to pass, and one is led to suspect that these nests were not the dwellings proper of these people, but occasional resorts for women and children, and that the somewhat extensive ruins in the valley below were their ordinary dwelling-places. On the brink of the promontory above stands the ruin of a tower, still twelve feet high, and similar in most respects to those already described. These

round towers are very numerous in the valley of the Mancos. From this point alone at least three others are in view, some on the higher promontories, others quite low, within twenty or thirty feet of the river-bed. I visited and measured seven along the lower fifteen miles of the course of this stream. In dimensions they range from ten to sixteen feet in diameter and from five to fifteen feet in height, while the walls are from one to two feet in thickness. They are in nearly every case connected with other structures, mostly rectangular in form. At the mouth of the Mancos, however, a double circle occurs, the smaller one having been the tower proper. It is fifteen feet in diameter, and from eight to ten in height. The larger circular wall is forty feet in diameter and from two to four feet high, and is built tangent to the smaller. This ruin is at the point where the Mancos reaches the alluvial bottom bordering the Rio San Juan, and about one mile above its junction with that river. On the opposite or south side of the river are traces of somewhat extensive ruins, but so indistinct that the character of the original structures cannot be made out, and indeed no single mile of the lower fifty of the Mancos is without such remains.

#### CANYON OF THE RIO MANCOS.

Fifteen miles from its junction with the San Juan, this stream emerges from the southwest border of the Mesa Verde, through which it has cut its way, producing a most remarkable cañon. This cañon has already been once or twice described; but in order to make my subsequent descriptions better understood, I shall give here an outline. The Mesa Verde is a somewhat irregular table-land, comprising an area of about seven hundred square miles, and is formed of a great series of nearly horizontal sedimentary rocks, of which the surrounding country has been denuded. This series of strata consists, in the upper part, of massive sandstones; in the middle part, of alternating sandstones and shales; and in the lower one thousand feet, chiefly of shales and clay. These softer beds are, when once exposed to the erosive agents, carried away with great rapidity, and, as a consequence, the firmer rocks above are undermined and break down in vertical cliffs, and, where soft and hard beds alternate, a series of steps, with intervening slopes, is formed. It will readily be seen that a cañon thus formed would consist in general of a narrow, irregular river-bottom, long steep slopes of *débris* rising like the arms of a letter V from this, then a succession of steep slopes, culminating above in a series of lofty, embattled cliffs. The cañon is nearly thirty miles in length, and ranges from one to two thousand feet in depth. It seems to have been a favorite resort of the cliff-building people, and traces of their industry may be found everywhere, along the bottoms, in the cliffs, and on the high, dry table-lands above.

The four following plates will be taken up in the delineation of the more interesting portions of these remains.

#### PLATE IV.

Figure 1 illustrates the method of walling up the cave-fronts as described on a preceding page. This sketch was made at the last-mentioned locality on the Rio Mancos. The group occurred in the cliff about thirty feet from the base. The three doorways opened into as many small apartments, and these were connected with each other by very small passage-ways. The farther door could not be reached from the outside, as the platform of rock had broken away.



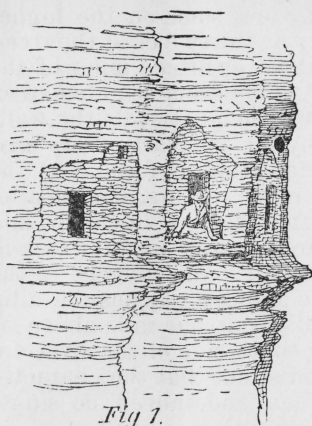


Fig. 1.

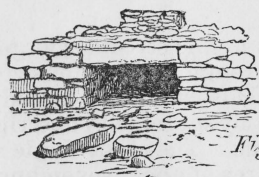


Fig. 6.

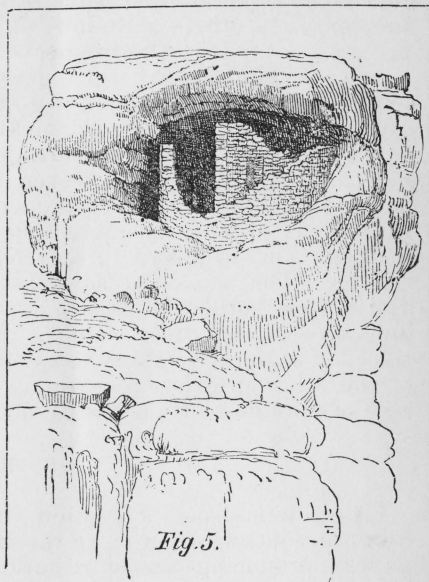


Fig. 5.

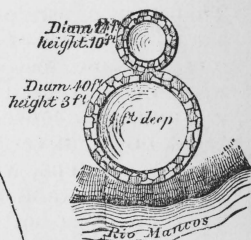
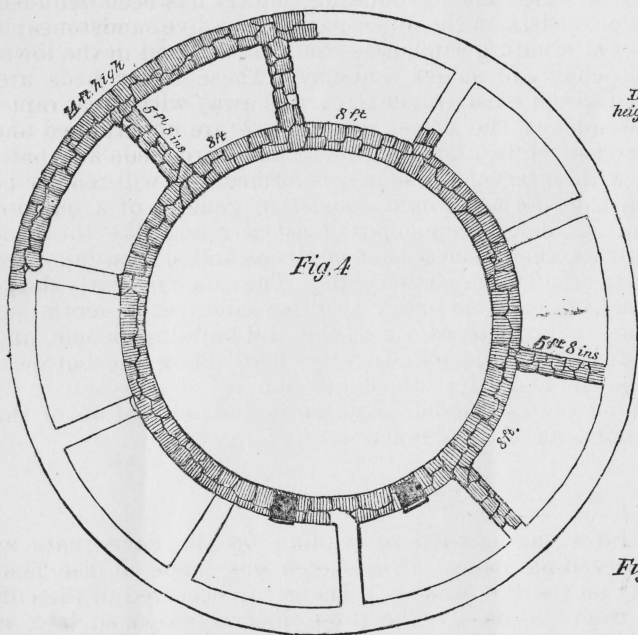


Fig. 2.

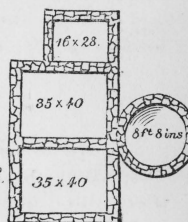


Fig. 3.



Figure 2 gives a plan of the double tower near the mouth of the Mancos; it has already been described.

The ruin, of which a plan is given in figure 3, occurs on the left bank of the Mancos about eight miles above the foot of the cañon. It is one of the best preserved specimens of the ruined towers, and seems to have been built with much skill. It is 9 feet in diameter on the inside and about 16 feet high. There are three rectangular apartments attached, the walls of which are almost leveled with the ground. In the side of the tower facing the river is a window, about 8 feet from the ground and 2 feet high by  $1\frac{1}{2}$  wide. I had been previously led to the conclusion that these towers were in all cases built without windows or openings of any kind within reach of the ground from without, and it is not improbable that this opening did not communicate with the outside, but served as a doorway between the tower and one of the adjoining apartments. The advantage of such an arrangement in a defensive work, such as we may suppose this to have been, is clearly apparent, and evinces not a little intelligence and forethought on the part of the builders. Being built in connection with dwellings and places of resort, they could, in case of alarm, be reached with ease from within, but be altogether secure from without.

This ruin was visited by Mr. Jackson last year, and a sketch of it has been published.

Figure 4. The large circular ruin, of which a ground-plan is given in this plate, was also visited by Mr. Jackson, photographs were made, and a brief description given; but I deem it best to give a more detailed description, the result of such observations and measurements as could be made in a period of time entirely too short for a work of such importance.

This ruin is situated on a narrow strip of alluvial bottom about midway in the cañon of the Mancos. On first approaching it, one does not observe that it differs greatly from the ordinary fragmentary structures below, as it is much decayed and almost hidden by artemisia and vines. Closer inspection, however, develops the greater part of the outline, and I imagine that a little excavation would bring all the foundations to light. The inner wall can be traced throughout the entire circle, and is in places 6 or 8 feet high. A portion of the outer wall, at the point farthest from the river, is still 12 feet in height and in a fair state of preservation. The space between the walls has been divided into cells, as in the two examples given in plate II. Four of the cross walls are still a number of feet high, while others can be traced by lines of *débris*. The diameter of the outer wall is 43 feet; that of the inner, 25 feet. They are faced up with larger stones than usual (the heaviest of which, however, could be lifted with ease by a single workman), and have been filled in with rubble, adobe, and wood. The outside courses have been dressed to the curve, and the implements used, judging from the appearance of the picked surfaces, have been of stone. The main walls are 21 inches in thickness, while the partition-walls are somewhat lighter, and seem to have been but slightly built into the circular walls.

In order to determine the probable number of these cells, I measured the two having complete walls, and found the inner side of each to be 8 feet. As these were both on one side of the circle, I had but to measure the remaining space to complete the semicircle, and on so doing found that there was just room for three additional cells and the necessary partition-walls; two of these were still traceable. To complete the circle, therefore, ten apartments would be necessary. Being desirous of confirming this conclusion, I took the diameter of the inner circle

as given in my notes, and, by adding twice the thickness of the wall, obtained a circumference of  $89\frac{1}{2}$  feet; just sufficient space to accommodate ten apartments, with an equal number of partition-walls a fraction less than 12 inches in thickness.

By adding to the diameter of the inner circle the total thickness of the walls, plus twice the distance between them, I obtained a diameter of 43 feet for the outer circle. The circuit of the structure is, therefore, 135 feet. Although these figures are greater than those previously given (estimated), I am confident that they cannot vary greatly from the truth.

There were no indications of windows or doors in the fragment of outer wall, but two nearly rectangular openings in the inner wall seem to have served as doorways between the central inclosure and the cells. We may suppose that each cell had similar means of communication with the interior. The one doorway that remains entire is 6 feet from the ground, and measures 2 feet in width by 3 in height. The stone-work of the facing is very neat and exact, and the lintel is of a single slab of sandstone. It may be fairly presumed that the outer wall had no doorways or windows within reach of the ground, and that entrance was obtained by means of ladders, through high windows or by way of the roof. The central inclosure has doubtless served as an *estufa*, and there are still evidences of a considerable depression.

That this ruin is quite ancient is attested by the advanced stage of decay, and that it has been of considerable height may be inferred from the large quantities of *débris*. A similar and somewhat more perfect example of double-walled tower is illustrated in plate VIII.

There seem to have been no buildings of importance in connection with this ruin, but many in the vicinity. On the point of a low rocky promontory that extends down from the mesa on the west to within a few yards of the circular ruin are some masses of decaying wall, and a large circular depression, not differing in appearance from the usual *estufa*.

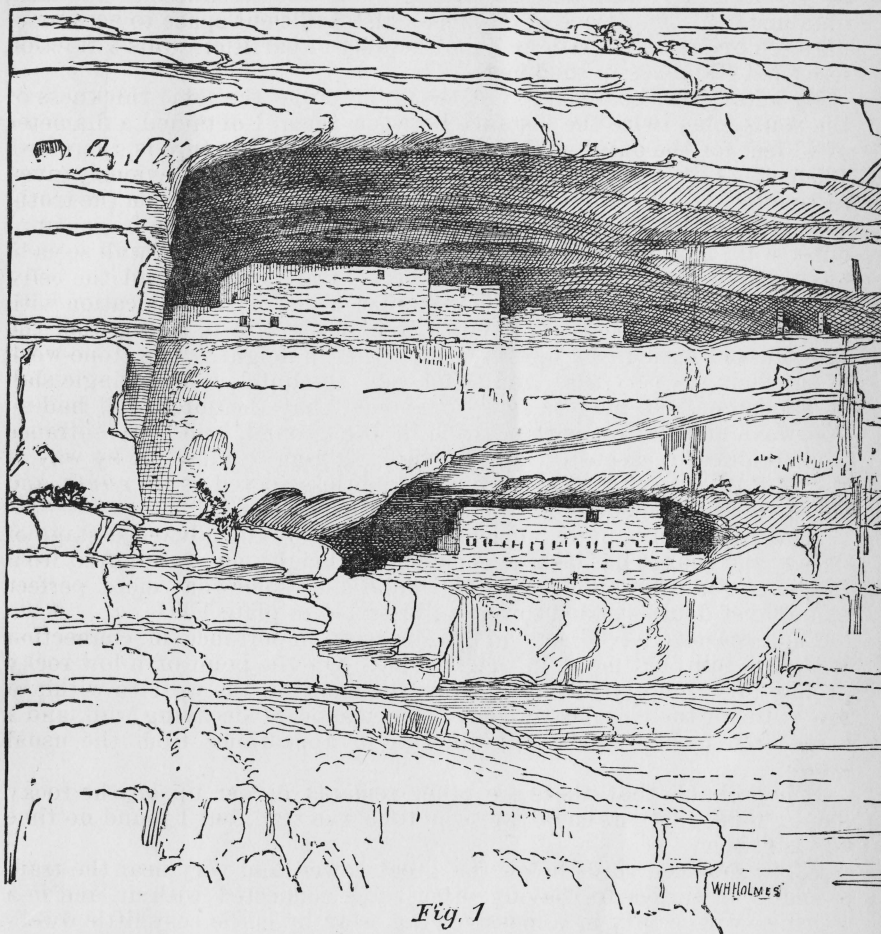
It is probable that there are other remains higher up on the rocky slope; indeed, others could be seen from the trail, but I found no time to visit them.

A few hundred yards below the great tower, and very near the trail, a smaller tower occurs, having other ruins connected with it, and in a weather-worn cavity in a massive crag near by is the cosy little dwelling shown in figure 5.

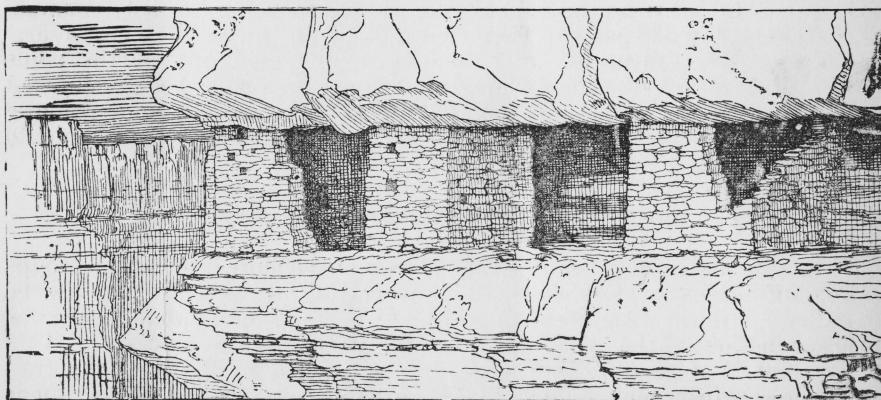
The rude little fire-place illustrated in figure 6 was observed by Mr. Brandegee in connection with a cliff-house on the opposite side of the cañon, a little farther up. It is remarkable as being the only example discovered by our party. There seem to be no traces whatever of fire-places, ovens, furnaces, or chimneys in or about any of the ruins described, which is rather remarkable, since fires must have been used in baking pottery and for domestic purposes, and we cannot suppose that a people so well advanced in architectural skill were unable to build fire-places and furnaces.

#### PLATE V.—CLIFF-HOUSES OF THE MANCOS.

In this plate are given sketches of two of the more interesting groups of cliff-houses, or fortresses, as they may quite as appropriately be called. Figure 1 represents a portion of a group found about ten miles from the foot of the cañon in a subordinate cliff on the west side. This low cliff is of massive sandstone, and is washed by the river, the trail being crowded back against the steep wall. At the height of about



*Fig. 1*







forty feet above the river, a bed of shale occurs in the sandstone, which, being easily disintegrated, has been weathered out and carried away, leaving a sort of horizontal groove some four feet high and from four to six feet deep. In this a row of diminutive houses has been built. Three of these are almost perfect, having a fresh, new look that certainly belies their age. Four others are much more decayed, and fragments of wall only cling to the cliffs. They have been made to occupy the full height and depth of the crevice, so that when one reaches it at the only accessible point, he is between two houses and must pass through these to get at the others. The doorways are quite small and bear no evidence of the fitting or hanging of doors; and the windows, of which a number open to the front, are but a few inches square.

The walls are strongly built and are from eight to ten inches thick. The stones are small, dressed roughly on the outside, and laid in mortar.

In many places the heavier seams of mortar have been chinked with bits of pottery and small flakes of sandstone. The marks of the mason's pick are as fresh as if made within a few years, and the fine, hard mud-mortar, which has been applied with the bare hands, still retains impressions of the minute markings of the cuticle of the fingers.

The house at the left hand in the drawing has two apartments, the farthest of which has a curved wall conforming with the rounded end of the crevice floor, which, beyond this for some distance, is broken down.

Specimens of the mortar and of the dressed stone were procured from this house and brought east. Below the middle part of this line of houses, on an irregular projection, are the remains of a number of walls, in such a state of ruin, however, that the character of the original structure could not be made out. In digging among the *débris* of this ruin, I came upon a bin of charred corn, in which the forms of the ears were quite perfect. It seems to be of a variety similar to that cultivated by the tribes of the neighborhood at the present time.

That this corn had been placed there by the ancient occupants seems probable from the fact that it occupied a sort of basement apartment or cellar, and had been buried beneath the fallen walls of the superstructures. Imbedded in this mass of charcoal, I found the very perfect specimen of stone implement figured in plate XIV (figure 3). Many large fragments of the ordinary painted pottery were also picked up here. A certain new look about portions of this group leads one to suspect that it cannot boast of great antiquity; but it is very difficult to calculate the effects of age upon walls so perfectly protected and in such a climate.

The group given in figure 2 is of a much more interesting and remarkable character. It was first observed from the trail, far below and nearly three-fourths of a mile away. From this point, by the aid of a field-glass, the sketch given in the plate was made. So cleverly are the houses hidden away in the dark recesses, and so very like the surrounding cliffs in color, that I had almost completed the sketch of the upper house before the lower or "sixteen-windowed" one was detected. They are at least eight hundred feet above the river. The lower five hundred feet is of rough cliff-broken slope, the remainder of massive bedded sandstone full of wind-worn niches, crevices, and caves. Within one hundred feet of the cliff-top, set deep in a great niche, with arched, overhanging roof, is the upper house, its front wall built along the very brink of a sheer precipice. Thirty feet below, in a similar but less remarkable niche, is the larger house, with its long line of apertures, which I afterward found to be openings intended rather for the insertion of beams than for windows.



I subsequently climbed the cañon-walls to make a closer examination of these ruins, and the plans given in plate VI were obtained.

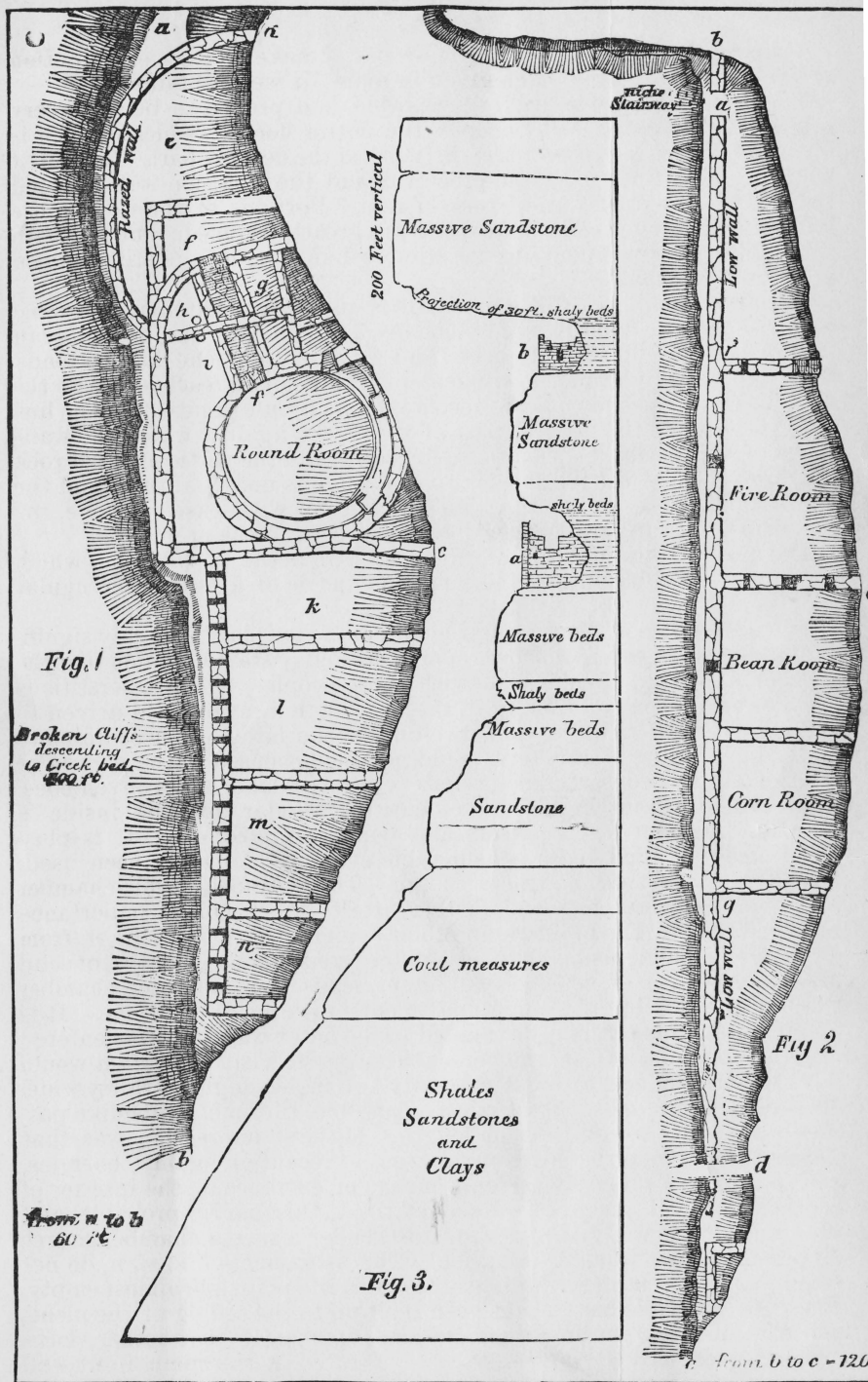
The lower house was easily accessible, and proved to be of a very interesting character. It occupies the entire floor of a niche which is about sixty feet long and fifteen in depth at the deepest part. The front walls are built flush with the precipice, and the partition-walls extend back to the irregular wall of rock behind. Portions of the wall at the left, viewing the house from the front, are greatly reduced; but the main wall, that part which contains the window-like openings, is still thirteen or fourteen feet high.

The arrangement of the apartments is quite complicated and curious, and will be more readily understood by a reference to the ground-plan (figure 1). The precipice-line, or front edge of the niche-floor, extends from *a* to *b*. From this the broken cliffs and slopes reach down to the trail and river, as shown in the accompanying profile (figure 3). The line *b c d* represents the deepest part of the recess, against which the walls are built. To the right of *b*, the shelf ceases, and the vertical face of rock is unbroken. At the left, beyond *a*, the edge is not so abrupt, and the cliffs below are so broken that one can ascend with ease. Above, the roof comes forward and curves upward, as seen in the profile.

The most striking feature of this structure is the *round room*, which occurs about the middle of the ruin and inside of a large rectangular apartment.

The occurrence of this circular chamber in this place is highly significant, and tends greatly to confirm my previously-stated opinion that the circle had a high significance with these people. Their superstitions seem to have been so exacting in this matter that, even when driven to the extremity of building and dwelling in the midst of these desolate cliffs, an inclosure of this form could not be dispensed with; a circular *estufa* had to be constructed at whatever cost of labor and convenience.

Its walls are not high and not entirely regular, and the inside is curiously fashioned with offsets and box-like projections. It is plastered smoothly, and bears considerable evidence of having been used, although I observed no traces of fire. The entrance to this chamber is rather extraordinary, and further attests the peculiar importance attached to it by the builders, and their evident desire to secure it from all possibility of intrusion. A walled and covered passage-way, *f, f*, of solid masonry, ten feet of which is still intact, leads from an outer chamber through the small intervening apartments into the circular one. It is possible that this originally extended to the outer wall, and was entered from the outside. If so, the person desiring to visit the *estufa* would have to enter an aperture about twenty-two inches high by thirty wide, and crawl, in the most abject manner possible, through a tube-like passage-way nearly twenty feet in length. My first impression was that this peculiarly-constructed doorway was a precaution against enemies, and that it was probably the only means of entrance to the interior of the house; but I am now inclined to think this hardly probable, and conclude that it was rather designed to render a sacred chamber as free as possible from profane intrusion. The apartments *l, k, m, n*, do not require any especial description, as they are quite plain and almost empty. The partition-walls have never been built up to the ceiling of the niche, and the inmates, in passing from one apartment to another, have climbed over. The row of apertures indicated in the main front wall are about five feet from the floor, and were doubtless entered for the





insertion of beams, although there is no evidence that a second floor has at any time existed. In that part of the ruin about the covered passage-way, the walls are complicated, and the plan can hardly be made out, while the curved wall inclosing the apartment *e* is totally overthrown.

In digging among the *débris* with our hammers, we came upon a large earthen vessel at *h*, and shortly afterward discovered another near *i*. They were so situated in a small recess under the sheltering walls that the falling rubbish had not reached them. Roughly-hewn stone lids were fitted carefully over the tops, but both were empty. One had been slightly broken about the rim, while the other had been pierced on the underside by some sharp instrument, and had been mended by laying a small fragment of pottery over the aperture on the inside and cementing it down with clay. They are of the ordinary corrugated pottery, and have a capacity of about three gallons.

Beneath the vessels, spread out on the floor, was a large piece of rush-matting, and beneath this a quantity of fine vegetable tissue from the interior bark of some kind of tree. The vessels are illustrated in plate XIII, and the matting in plate XIV.

The rock-face between this ruin and the one above is smooth and vertical, but by passing along the ledge a few yards to the left a sloping face was found, up which a stairway of small niches had been cut; by means of these, an active person, unincumbered, could ascend with safety. On reaching the top, one finds himself in the very doorway of the upper house (*a*, figure 2) without standing-room outside of the wall, and one can imagine that an enemy would stand but little chance of reaching and entering such a fortress if defended, even by women and children alone. The position of this ruin is one of unparalleled security, both from enemies and from the elements. The almost vertical cliff descends abruptly from the front wall, and the immense arched roof of solid stone projects forward 15 or 20 feet beyond the house (see section, figure 3). At the right the ledge ceases, and at the left stops short against a massive vertical wall. The niche-stairway affords the only possible means of approach.

The house occupies the entire floor of the niche, which is about 120 feet long by 10 in depth at the deepest part. The front wall to the right and left of the doorway is quite low, portions having doubtless fallen off. The higher wall *fg* is about 30 feet long, and from 10 to 12 feet high, while a very low rude wall extends along the more inaccessible part of the ledge, and terminates at the extreme right in a small inclosure, as seen in the plan at *c*.

In the first apartment entered, there were evidences of fire, the walls and ceiling being blackened with smoke. In the second, a member of the party,\* by digging in the rubbish, obtained a quantity of beans, and in the third a number of grains of corn, hence the names given. There are two small windows in the front wall, and doorways communicate between rooms separated by high partitions.

The walls of these houses are built in the usual manner, and average about a foot in thickness.

The upper house seems to be in a rather unfinished state, looking as if stone and mortar had run short. And when one considers that these materials must have been brought from far below by means of ropes, or carried in small quantities up the dangerous stairway, the only wonder is that it was ever brought to its present degree of finish.

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\* Mr. Brandegees.

Figure 3 is given for the purpose of making clear the geologic conditions that give shape to the cliffs as well as to show the relations of these houses to the cliffs. The hard and massive beds of rock resist the erosive agents; the soft and friable beds yield, hence the irregularity—the overhanging cliffs, the niches and benches. *a* is a section of the lower house, *b* of the upper.

It has heretofore been supposed that the occupants of these houses obtained water, either from the river below or from springs on the mesa above; but the immense labor of carrying water up these cliffs, as well as the impossibility of securing a supply in case of siege, made me suspect the existence of springs in the cliffs themselves. In three or four cases these springs have been found, and it is evident that with a climate a very little more moist than the present, a plentiful supply could be expected. Running water was found within a few yards of the group of houses just described, and Mr. Brandegee observed water dripping down the cliffs near a group of small houses on the opposite side of the cañon.

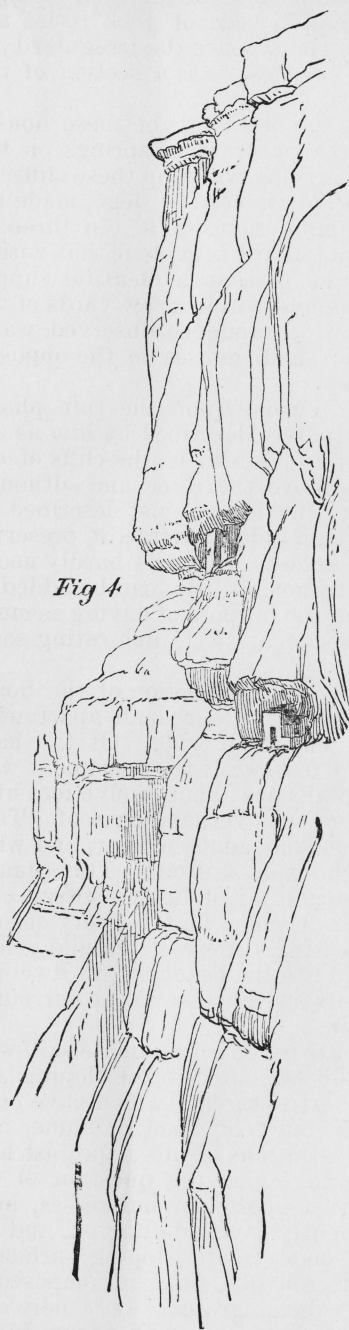
About one mile farther up the cañon, I came upon the ruin photographed by Mr. Jackson in 1874, and minutely described by him as the two-story cliff-house of the Rio Mancos. It is also in the cliffs of the north side, about seven hundred feet above the river, and although not so large or complicated in design as the houses just described, it shows higher skill in construction and is in a better state of preservation. It is also exceedingly difficult of access. It seems hardly necessary for me to enter into a detailed description, as little can be added to what has already been published;\* but for the purpose of having as much of the matter together as possible I present plate VII, illustrating some of the interesting features of this house.

Figure 1 gives the ground-plan, and shows the position of the house in relation to the floor of the niche. There are four small apartments only; the front one, *a*, being 10 feet long by 6 wide. Of the back rooms, one is 9 by 10 and the other 6 by 6 feet, while the apartment with the curved wall is much smaller. The walls are about twelve feet high and reach within from two to three feet of the overhanging roof. They are built in the ordinary manner of stone and adobe mortar, and what is rather remarkable are plastered both inside and out. This plaster does not differ greatly from the common mortar, is lightly spread over the walls, probably with the hands, and in color imitates very closely the hues of the surrounding cliffs, a pleasing variety of red and yellow grays. Whether this was intended to add to the beauty of the dwelling or to add to its security by increasing its resemblance to the surrounding cliffs, I shall not attempt to determine.

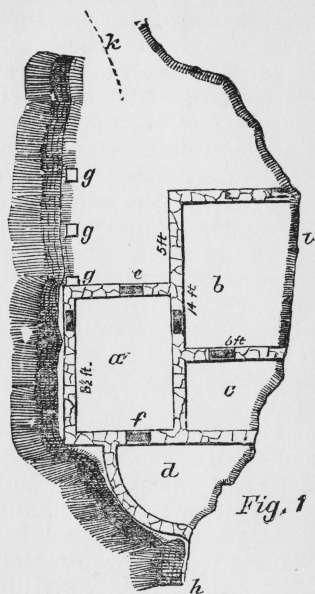
Another remarkable feature of this house is the consummate skill with which the foundations are laid upon and cemented to the sloping and overhanging faces of the ledge. The buttresses *b*, *b*, which have probably at one time supported a superstructure of wood or stone, now totally obliterated, are most striking illustrations of this; and just here is a fact that has an interesting bearing upon the question of the antiquity of this structure. These wall-supports, or buttresses, have originally been four in number, one evidently having falling off, and are built in continuation of the front wall, on a smooth, sloping surface of rock. Now the sandstone of which this rounded slope is composed is rather coarse and soft, and hence easily disintegrated. It is here also not greatly protected from the weather, since the cliffs above do not

\* Bulletin No. 1, second series, p. 20.

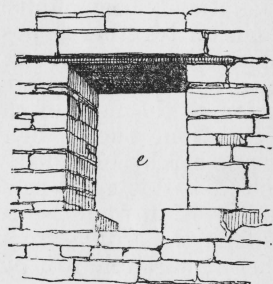




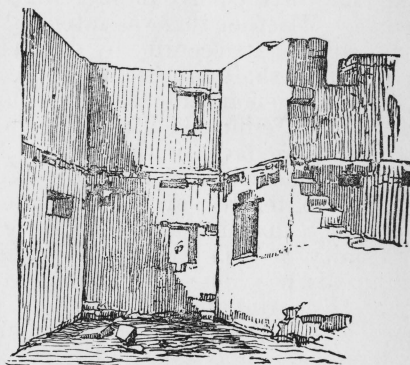
*Fig. 4*



*Fig. 1*



*Fig. 2.*



*Fig. 3*





overhang to any extent, and must, year by year, yield a little to the elements; but I observe that since the construction of these foundations no perceptible change has taken place; the thickness of a sheet of paper has hardly been washed from the surface of the rock, and the mortar, which is of almost equal firmness with the rock, lies upon it as if placed there within a dozen years, and the plaster on the outer wall, although somewhat cracked and broken off, does not add greatly to our impressions of antiquity.

There is also a fact worthy of notice in regard to the question of occupancy. I have already stated my impressions that these houses were not used as constant dwelling-places, but rather as places of occasional resort. I notice that, although the building seems complete, and has had its floors laid and its door-ways and windows conveniently and carefully arranged, the plastering of the interior is almost untouched, that with the exception of three names scratched in the soft, thick coat of adobe by Mr. Jackson's party, there is almost no trace of the presence of man; yet this plaster may have been applied only shortly before the final desertion, and hence no definite conclusion can be drawn.

A sketch of one of the doorways is given in figure 2. The outline is accurately drawn, but there is a little too much regularity in the stonework. It will be seen that the aperture is of very nearly the same width above and below, which is rather unusual, since, in these ruins, as well as in those farther south, the door ways and windows are, as a rule, narrower at the top. This drawing also shows the manner of employing a number of small straight beams of wood as lintels, for the purpose, evidently, of strengthening the masonry above.

There are two of these exterior door-ways only, one opening into each story of the front room from the unoccupied part of the niche; these are shown in figure 3, a sketch of the interior of the front room taken from the side *f*. There is only a low wall between this room and the room *c*, while small door-ways communicate with the other apartments. There is a small rectangular window, 22 inches high by 30 wide, in the front wall, from which a fine view can be had of the deep narrow valley below.

Figure 4 is designed to show the extraordinary situation of these houses. Whether viewed from below or from the heights above, the effect is almost startling, and one cannot but feel that no ordinary circumstances could have driven a people to such places of resort.

There are no ruins of importance in the cañon of the Mancos above the two-story house. Indistinct remains occur on the bottoms in a number of places, and a few small houses were observed in the cliffs. The most interesting of these is built upon a ledge about 40 feet above the trail, and is nearly midway between the two-story house and the head of the cañon. It does not differ in any essential point from the ruins already described. I shall therefore pass it by, in order to take up two very interesting groups of ruins that occur about twenty miles to the northwest.

Between the Mesa Verde and the Late Mountains, of which Ute peak is the culminating summit, there is a long, deep valley or strip of lowland that connects the great lowland of the Lower Mancos with the cañon-cut plain that rises toward the Dolores. The southern end of this depressed strip drains into the Mancos, the northern into the McElmo. The latter stream heads along the north base of the Mesa Verde within five miles of the Mancos at the point where it enters the cañon, and flows westward, passing along the north base of Ute Mountain, curving around to the southwest and reaching the San Juan nearly ten miles

beyond the Utah line. The large depressed area drained by this stream contains a great number of ruins, many of which have not yet been examined.

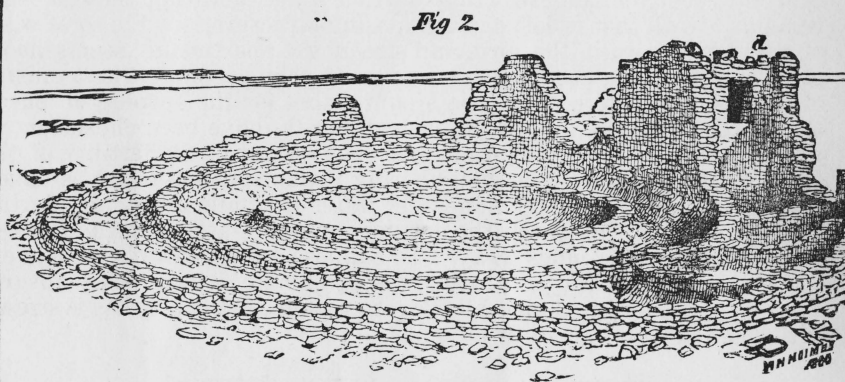
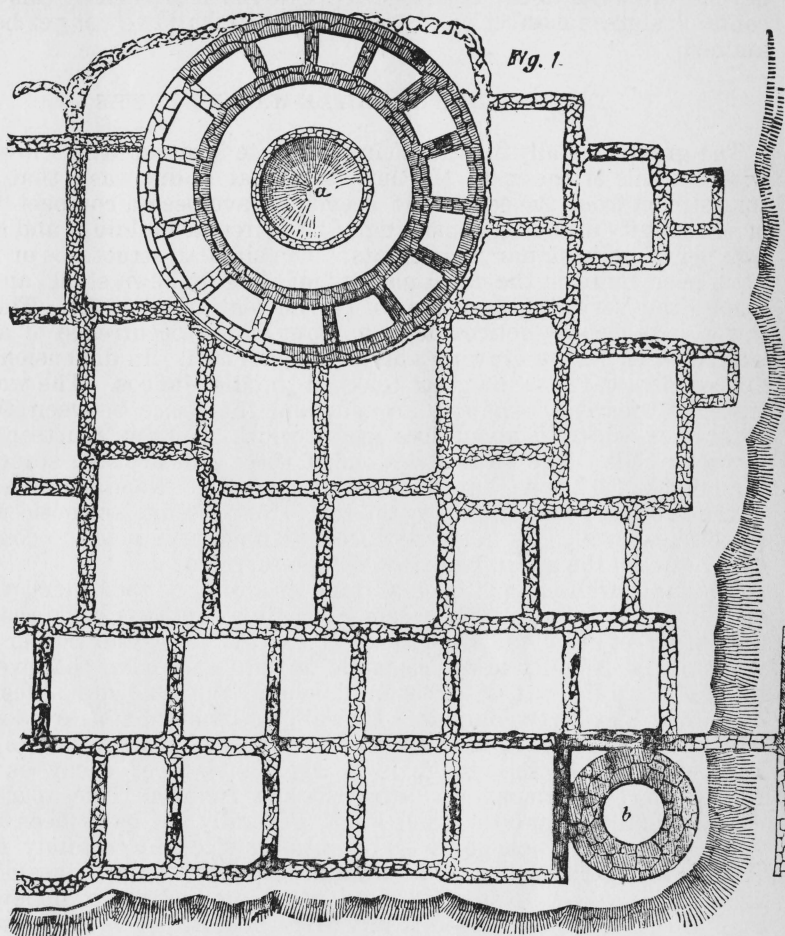
#### PLATE VIII.—THE TRIPLE-WALLED TOWER.

The group partially illustrated in this plate is situated on a low bench within a mile of the main McElmo, and near a dry wash that enters that stream from the south. It seems to have been a compact village or community-dwelling, consisting of two circular buildings and a great number of rectangular apartments. The circular structures or towers have been built, in the usual manner, of roughly-hewn stone, and rank among the very best specimens of this ancient architecture. The great tower is especially noticeable on account of the occurrence of a third wall, as seen in the drawing and in the plan at *a*. In dimensions it is almost identical with the great tower of the Rio Mancos. The walls are traceable nearly all the way around, and the space between the two outer ones, which is about five feet in width, contains fourteen apartments or cells. The walls about one of these cells are still standing to the height of 12 feet; but the interior cannot be examined on account of the rubbish which fills it to the top. No openings are noticeable in the circular walls, but door-ways seem to have been made to communicate between the apartments; one is preserved at *d*.

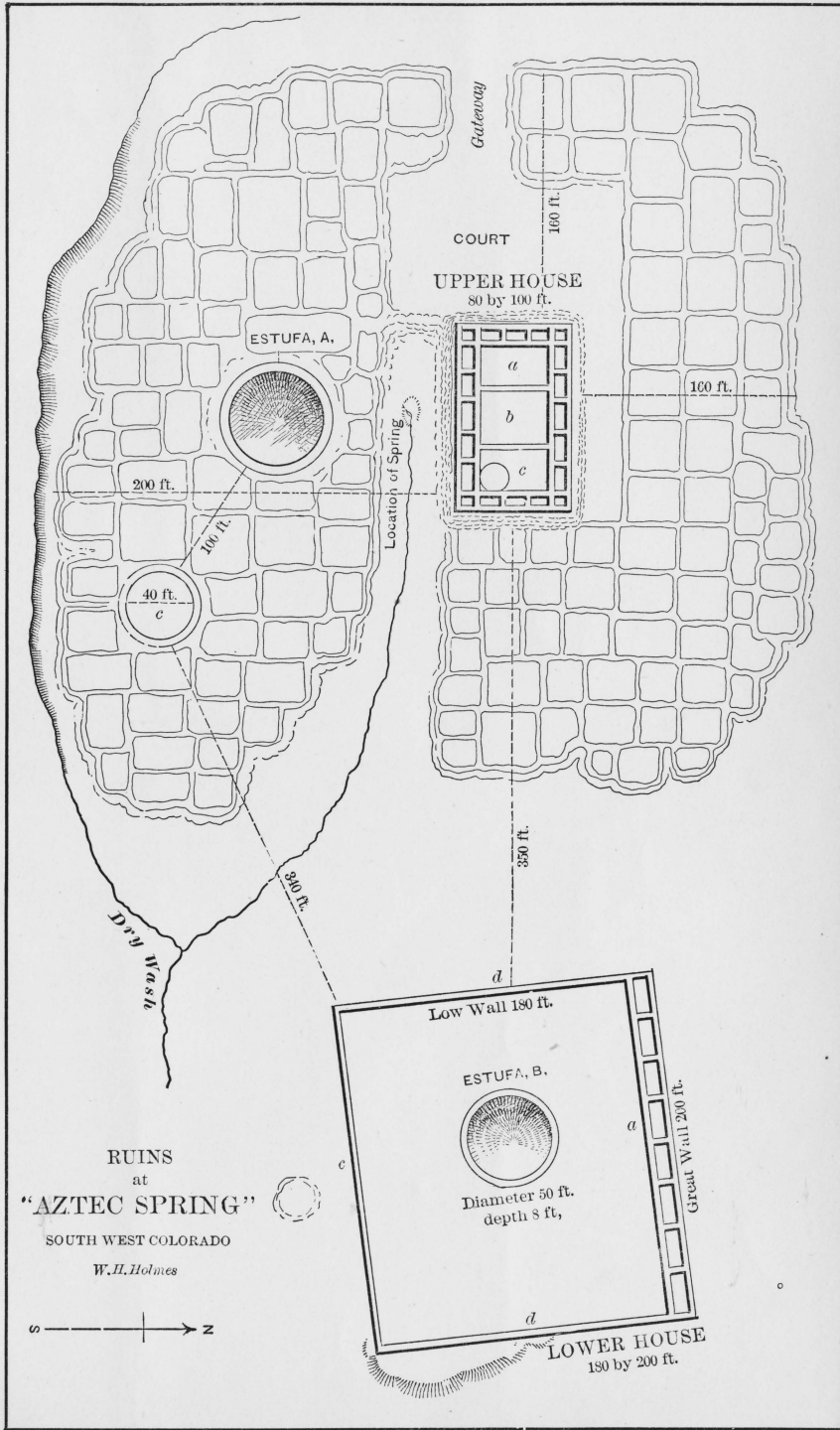
The inner wall has not been as high or strong as the others, and has served simply to inclose the *estufa*. This tower stands back about one hundred feet from the edge of the mesa and near the border of the village. The smaller tower, *b*, stands forward on a point that overlooks the shallow gulch; it is 15 feet in diameter; the walls are  $3\frac{1}{2}$  feet thick and 5 feet high on the outside. Beneath this ruin, in a little side gulch, are the remains of a wall twelve feet high and twenty inches thick. The remainder of the village is in such a state of decay as to be hardly traceable among the artemisia and rubbish. The apartments number nearly a hundred, and seem, generally, to have been rectangular. They are not, however, of uniform size and certainly not arranged in regular order. The walls are marked by low lines of loose rubble which show no stone in place, and I am inclined to believe that they have never been raised to any great height. It is not impossible that they have been, originally, of a species of rubble-masonry such as is seen in some of the great *casas* farther south, and that these meager remains are all that is left of an imposing structure, but the total want of regularity both in the form and size of the apartments seems inconsistent with such a conclusion. In reality they are more like a cluster of pens such as are used by the Moqui tribes for the keeping of sheep and goats. The site of this village can hardly have been chosen on account of its defensive advantages, nor on account of the fertility of the surrounding country. The neighboring plains and mesas are as naked and barren as possible. The nearest water is a mile away, and during the drier part of the season the nearest running water is in the Rio Dolores, nearly fifteen miles away. To suppose an agricultural people existing in such a locality, with the present climate, is manifestly absurd. Yet every isolated rock and bit of mesa within a circle of miles is strewn with remnants of human dwellings.

#### PLATE IX.—RUINS AT "AZTEC SPRINGS."

Another very important group of ruins is located in the depression between the Mesa Verde and the Late Mountains, and near the divide

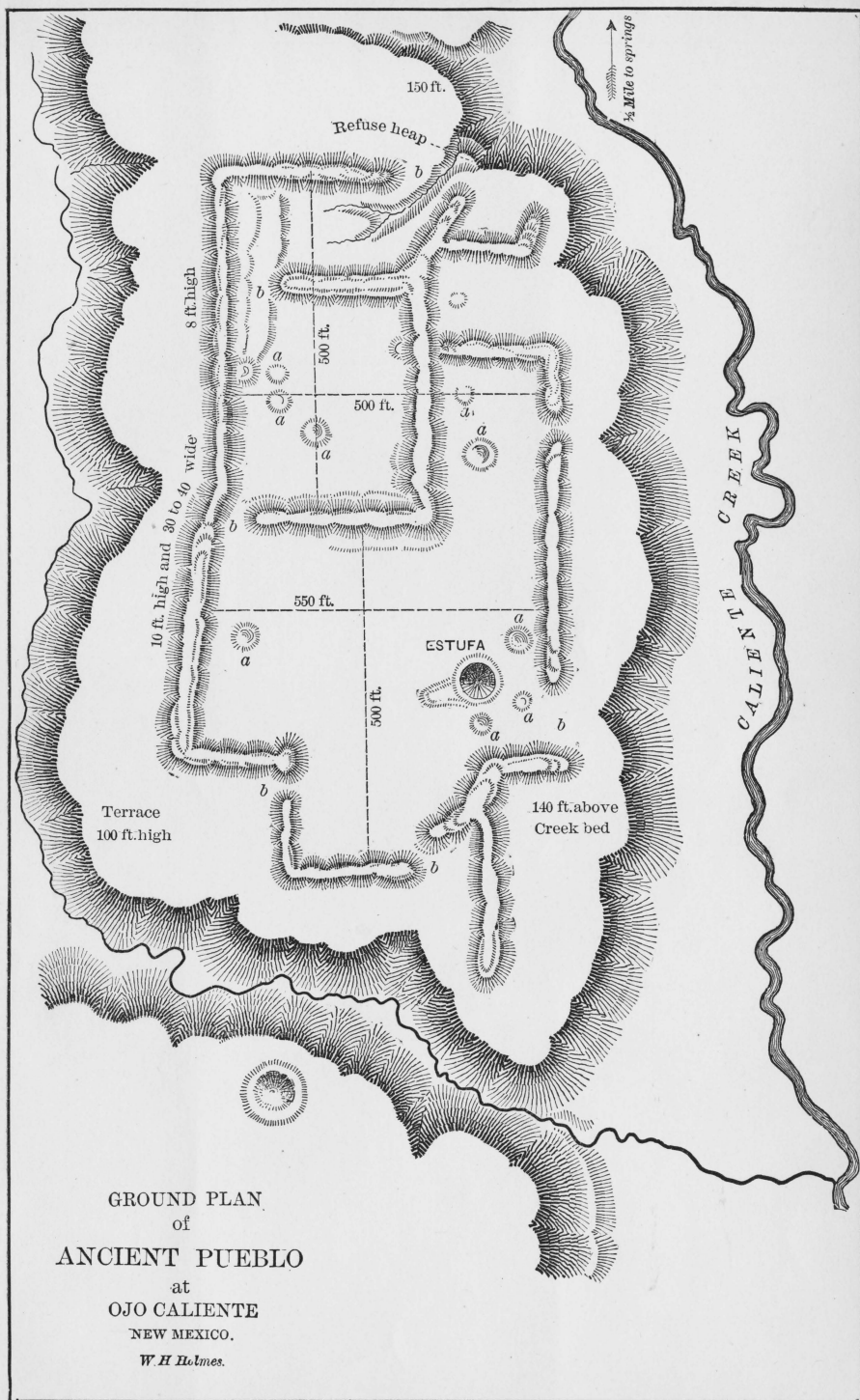














between the McElmo and Lower Mancos drainage. It is stated by Captain Moss and others who have been in this locality that up to within two or three years there has been a living-spring at this place, and the spot has been christened by them Aztec Springs.

The site of the spring I found, but without the least appearance of water. The depression formerly occupied by it is near the center of a large mass of ruins, similar to the group last described, but having a rectangular instead of a circular building as the chief and central structure. This I have called the *upper house* in the plate, and a large walled inclosure a little lower on the slope, I have, for the sake of distinction, called the *lower house*.

These ruins form the most imposing pile of masonry yet found in Colorado. The whole group covers an area of about four hundred and eighty thousand square feet, and has an average depth of from three to four feet. This would give in the vicinity of one million five hundred thousand solid feet of stone-work. The stone used is chiefly of the fossiliferous limestone that outcrops along the base of the Mesa Verde a mile or more away, and its transportation to this place has doubtless been a great work for a people so totally without facilities.

The upper house is rectangular, measures 80 by 100 feet, and is built with the cardinal points to within five degrees. The pile is from 12 to 15 feet in height, and its massiveness suggests an original height at least twice as great. The plan is somewhat difficult to make out on account of the very great quantity of *débris*.

The walls seem to have been double, with a space of 7 feet between; a number of cross-walls at regular intervals indicate that this space has been divided into apartments, as seen in the plan.

The walls are 26 inches thick, and are built of roughly-dressed stones, which were probably laid in mortar, as in other cases.

The inclosed space, which is somewhat depressed, has two lines of *débris*, probably the remains of partition-walls, separating it into the three apartments, *a*, *b*, *c*. Inclosing this great house is a net-work of fallen walls, so completely reduced that none of the stones seem to remain in place; and I am at a loss to determine whether they mark the site of a cluster of irregular apartments, having low, loosely-built walls, or whether they are the remains of some imposing adobe structure built after the manner of the ruined pueblos of the Rio Chaco.

Two well-defined circular inclosures or estufas are situated in the midst of the southern wing of the ruin. The upper one, *A*, is on the opposite side of the spring from the great house, is 60 feet in diameter, and is surrounded by a low stone wall. West of the house is a small open court, which seems to have had a gate-way opening out to the west, through the surrounding walls.

The lower house is 200 feet in length by 180 in width, and its walls vary fifteen degrees from the cardinal points. The northern wall, *a*, is double, and contains a row of eight apartments about 7 feet in width by 24 in length. The walls of the other sides are low, and seem to have served simply to inclose the great court, near the center of which is a large walled depression, (estufa *B*.) No other ruins were observed in the neighborhood of these, although small groups are said to exist along the base of the Late Mountains, a few miles to the southwest.

#### PLATE X.—RUIN AT OJO CALIENTE, NEW MEXICO.

For the sake of comparison, I present in Plate X the ground-plan of a ruined pueblo found at *Ojo Caliente*, New Mexico. It occurs on a high,

Almost isolated fragment of terrace near Caliente Creek. It has been constructed chiefly of adobe, and has consisted of rows of apartments surrounding a number of large open courts. Individual walls cannot be traced, and the rows of houses are reduced to smooth rounded ridges of earth. These are indicated on the plan, and are often as much as 8 feet high, and 30 feet wide at the base. The courts contain a number of small circles and mounds, *a, a*, and the single *estufa* is identical in appearance with those among the ruins of Colorado. A number of openings, *b, b*, through the walls indicate the location of gate-ways. *Metates*, arrow-heads, and many fragments of pottery were found. Many other groups of ruins similar to this occur in this as well as in the neighboring valleys. Near Abiquiu, a large pueblo occurs, at which I found a stone axe and a number of arrow-heads and *metates*. A couple of skeletons were also obtained here. This ruin is described at length by Dr. Yarrow in his report for 1874.\*

#### PLATES XI AND XII.

Although it is quite impossible to read the curious rock-inscriptions of unknown tribes, or even to conjecture to any extent their meaning, yet it is conceded that in most cases they have a meaning and represent an idea or record an event. Aside from this, however, they are valuable to the historian as records of the grade of civilization reached by the tribes who executed them.

That the examples given in the two following plates belong to the age of the cliff-builders, cannot be satisfactorily proved, but, at the same time, evidence that they do, is not wanting. Some are found on the cliffs and in the niches with the cliff-dwellings, while all are in localities that must have been frequently visited by these people. Some are found in the cañon of the Mancos, others on the bluffs of the San Juan, and many in the cañons farther west.

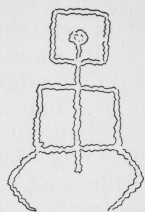
Figures 1, 2, and 3, Plate XI, occur on the Mancos near the group of cliff-houses figured in Plate V. They are chipped into the rock, evidently by some very hard implement, and rudely represent the human figure. They are certainly not attempts to represent nature, but have the appearance rather of arbitrary forms designed to symbolize some imaginary being.

Figures 4, 5, and 6 were found in the same locality, not engraved, but painted in red and white clay upon the smooth rocks. These were certainly done by the cliff-builders, and probably while the houses were in process of construction, since the material used is identical with the plaster of the houses. The sketches and notes were made by Mr. Brandegee. The reproduction is approximately one-twelfth the size of the original.

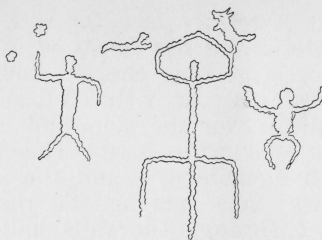
The examples given in figures 7, 8, 9, 10, and 11, as well as those in Plate XII, occur on the Rio San Juan, about ten miles below the mouth of the Rio La Plata. A low line of bluffs, composed of light-colored massive sandstones that break down in great smooth-faced blocks, rises from the river-level and sweeps around toward the north. Each of these great blocks has offered a very tempting tablet to the graver of the primitive artist, and very many of them contain curious and interesting inscriptions. Drawings were made of such of these as the limited time at my disposal would permit. They are all engraved or cut into the face of the rock, and the whole body of each figure has generally been chipped out, frequently to the depth of one-fourth or one-half an inch.

The work on some of the larger groups has been one of immense

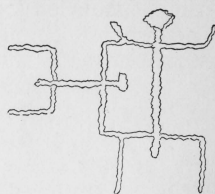
\* Report of the Chief of Engineers for 1875, page 1064.



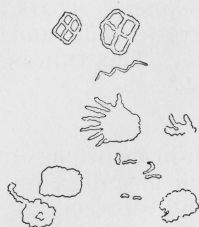
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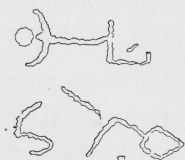
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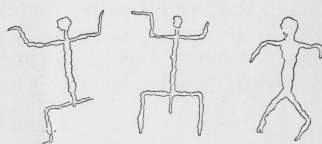
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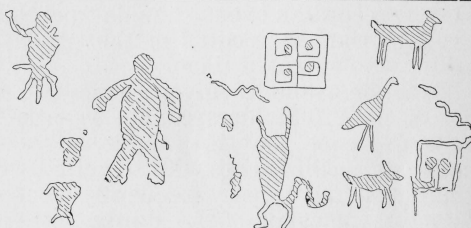
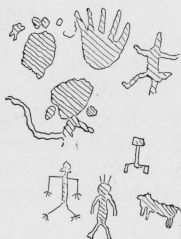
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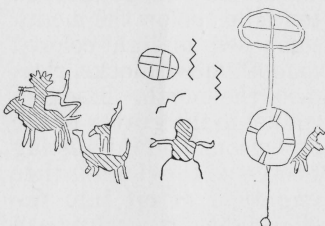
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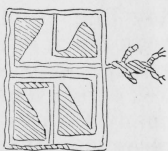
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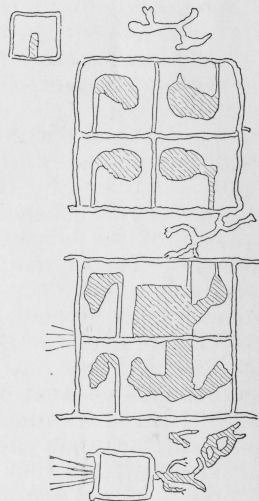
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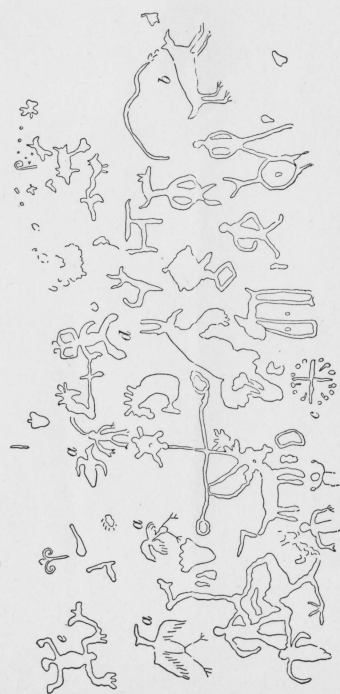
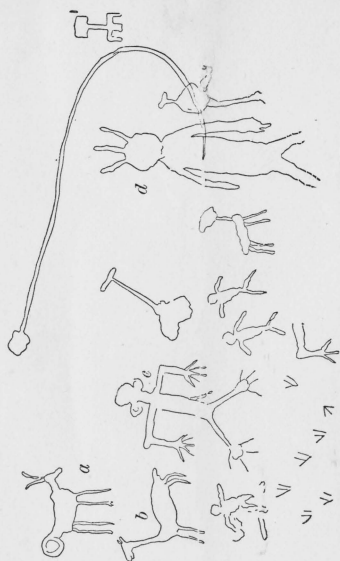
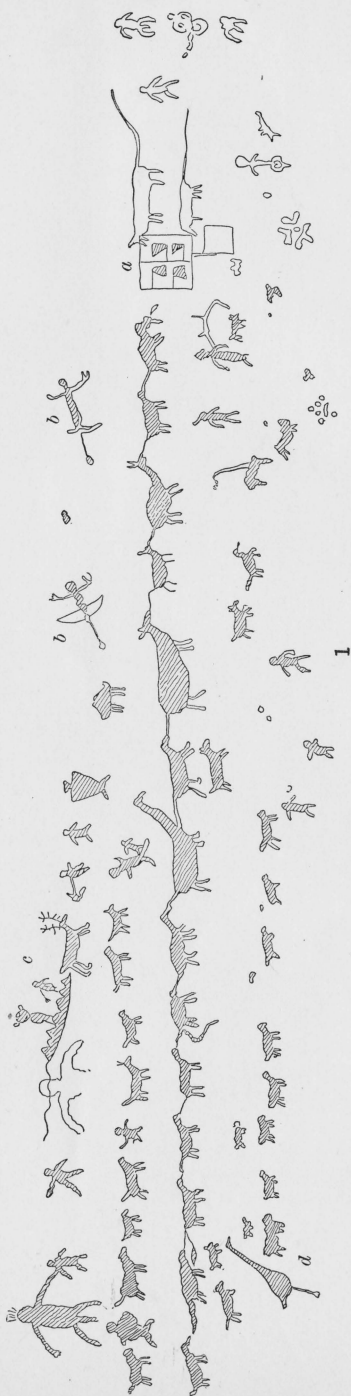


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labor, and must owe its completion to strong and enduring motives. With a very few exceptions the engraving bears undoubted evidence of age. Such new figures as occur are quite easily distinguished, both by the freshness of the chipped surfaces and by the designs themselves. Figure 11 gives a specimen of the modern work; it is evidently intended to represent a horse, and is done in the manner of the Navajoes. It will readily be seen that among all the figures given of the ancient work there is no animal that resembles a horse, and we can hardly suppose that artists who could so cleverly delineate birds and deer and men, would fail in an attempt to represent an animal of so marked a character. The curious designs given in figure 10 have a very perceptible resemblance to many of the figures used in the embellishment of pottery.

The most striking group observed is given in figure 1, Plate XII. It consists of a great procession of men, birds, beasts, and fanciful figures. The whole picture as placed upon the rock is highly spirited, and the idea of a general movement toward the right, skillfully portrayed. A pair of winged figures hover above the train as if to watch or direct its movements; behind these are a number of odd figures, followed by an antlered animal resembling a deer, which seems to be drawing a notched sledge containing two figures of men. The figures forming the main body of the procession appear to be tied together in a continuous line, and in form resemble one living creature about as little as another. Many of the smaller figures above and below are certainly intended to represent dogs, while a number of men are stationed about, here and there, as if to keep the procession in order.

As to the importance of the event recorded in this picture, no conclusions can be drawn; it may represent the migration of a tribe or family or the trophies of a victory. A number of figures are wanting in the drawing at the left, while some of those at the right may not belong properly to the main group. The reduction is, approximately, to one-twelfth.

Figures 2 and 3 of the same plate represent only the more distinct portions of two other groups. The complication of figures is so great that a number of hours would have been necessary for their delineation, and an attempt to analyze them here would be fruitless.

#### PLATE XIII.—POTTERY.

It is generally conceded that the ancient tribes of the San Juan produced fictile fabrics superior to those of the town-building tribes of to-day. There is, however, great similarity between the ancient and modern work, both in material and execution, and the differences are not greater than could be expected in the manufactures of the same tribe at periods separated by two or three centuries of degeneration.

The study of the fragmentary ware found about the ruins is very interesting, and its immense quantity is a constant matter of wonder. On one occasion, while encamped near the foot of the Mancos Cañon, I undertook to collect all fragments of vessels of manifestly different designs within a certain space, and by selecting pieces having peculiarly marked rims, I was able to say with certainty that within ten feet square there were fragments of fifty-five different vessels. In shape these vessels have been so varied that few forms known to civilized art could not be found. Fragments of bowls, cups, jugs, pitchers, urns, and vases, in infinite variety, may be obtained in nearly every heap of *débris*.

The art of ornamentation seems to have been especially cultivated, as

very few specimens are found that are not painted, indented, or covered with raised figures. Indeed, these ornamental designs are often so admirable, and apparently so far in advance of the art-ideas of these people in other respects, that one is led to suspect that they may be of foreign origin. This suspicion is in a measure confirmed when we discover the scroll and the fret struggling for existence among the rude scrawlings of an artisan who seems to have made them recognizable rather by accident than otherwise. It is not improbable, however, that the specimens referred to are but rude copies of models designed by more accomplished artists or procured from some distant tribe. There is certainly no conclusive evidence that these people ever came in contact with Europeans.

The material used in the manufacture of pottery is generally a fine clay, (in which the country abounds,) tempered with sand or pulverized shells. The modeling is done almost exclusively with the hand; no wheel has been used, and no implement whatever, except for surface creasings or indentings.

The thickness of the ware varies from  $\frac{1}{8}$  to  $\frac{1}{2}$  an inch. Lightness has evidently been greatly desired, and vessels having a capacity of many gallons are not more than  $\frac{1}{4}$  of an inch thick in any part.

Nearly all of the vessels and fragments collected have been baked or burned, but not to such a degree as to greatly change the color of the clay. Most, if not all, of the painted pottery is glazed with a very thin vitreous coating that gives a beautiful enamel-like surface of great hardness; upon this the coloring-matter is laid, apparently with a brush. With one or two exceptions the corrugated pottery is without the glazing, and in no instance contains painted figures. The peculiarities of this variety can be described more readily by reference to the examples in the plate.

Figure 1 represents a large vessel obtained in one of the Mancos cliff-houses (Plate VI). It is of the corrugated variety; has a capacity of about three gallons, and was probably used for carrying or keeping on hand a supply of water. It is quite light, not weighing more than a common wooden pail, and is made of a light-gray clay tempered with coarse sand, and but slightly burned. The corrugated appearance is given by laying on strips of clay, in somewhat regular succession, and pressing them into place and indenting them with the thumb or a stick. Whether a thin shell of clay is first constructed and the strips laid on and pressed down so as to unite with it, or whether the vessel is built up by the strips alone, cannot be determined, since the inside is perfectly smooth, excepting finger-marks, and the strips are so welded into the general texture of the vessel that individual strips cannot be detected beneath the surface when examined on broken edges.

In the specimen figured the workman has begun near the center of the rounded bottom and laid a strip in a continuous but irregular spiral (see Fig. 3) until the rim was reached, indenting the whole surface irregularly with the finger. Two small conical bits of clay have been set in near the rim, as if for ornament. Other specimens have small spirals, while others have scrolls, and still others very graceful festoons of clay (Figs. 2 and 2a). A number of the more distinct styles of indentation are given in connection with this figure (Figs. 3, 3a, 3b, 3c, and 3d).

Figure 4 is a bowl restored from a large fragment. It is painted both inside and out, and the designs are applied with rather more than usual care.

Figures 5, 5a, and 5b are prominent among the ornamental designs. I have corrected the drawing, but have introduced no new element.

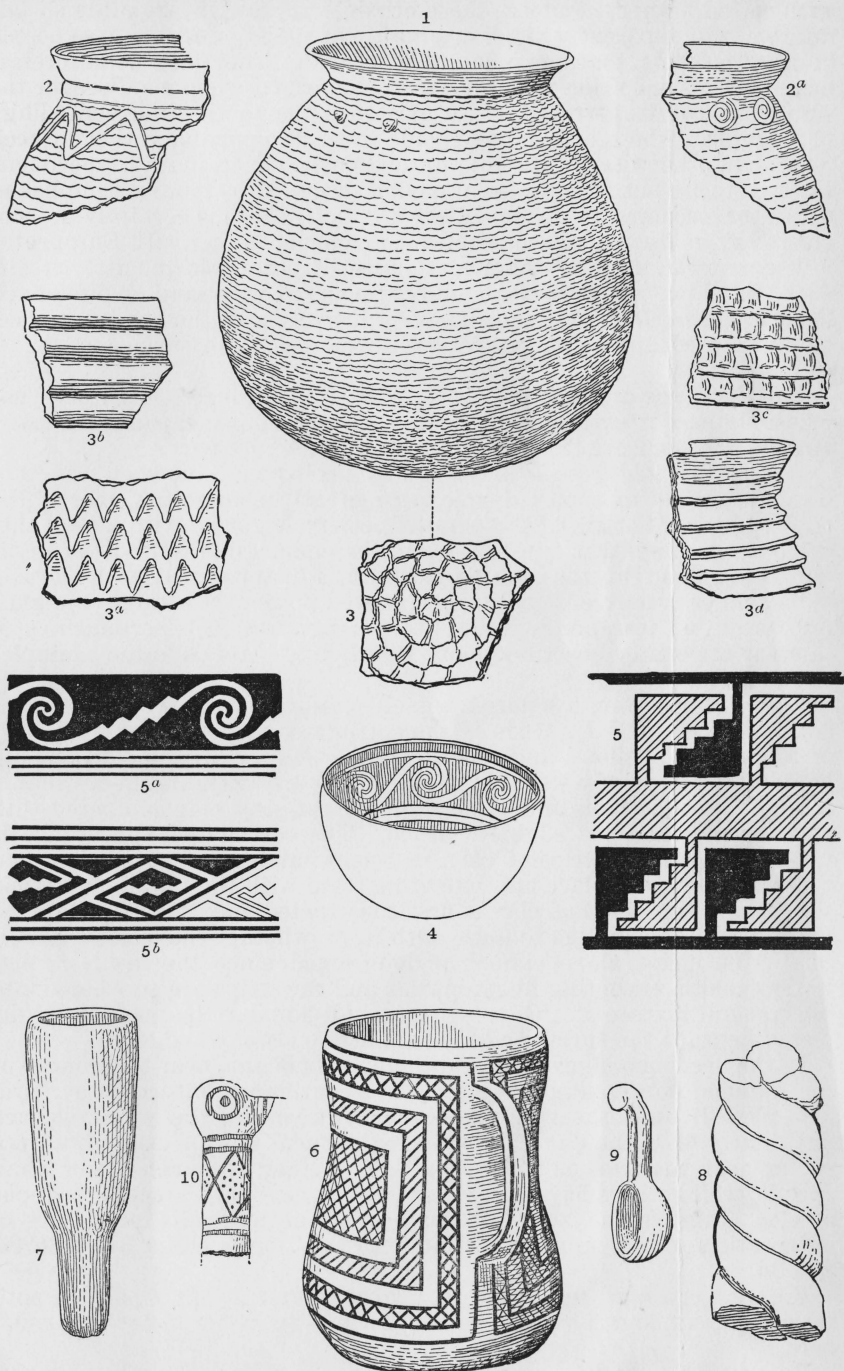






Figure 6 represents a very usual pattern of mug or cup. It is of the ordinary painted ware, and is made to contain about a pint. The specimen is not entire.

Figure 7 is apparently a pipe. It was found by Mr. Aldrich, near a ruin on the San Juan, and is made of the ordinary potter's clay; it is 2 inches in length.

Figure 8 represents part of an ornamental handle, formed by twisting together three small rolls of clay.

Figure 9 represents a small spoon or ladle. Fragments of similar implements are quite numerous.

Figure 10 is a portion of the handle of some small vessel.

As to whether the manufacture of pottery was carried on in certain favorable localities only, or whether each village had its own skilled workmen or workwomen, I cannot determine, since, as previously stated, no remains of kilns or manufactories were discovered. The forms and styles of ornament are pretty uniform, which is to be expected in either case, since the inhabitants of the various villages must have had constant communication with each other.

#### PLATE XIV.

This plate contains drawings of a number of stone implements, arrow-heads, ornaments, and other articles manufactured or used by the ancient inhabitants of this region. Nearly all were found so associated with the architectural remains that I do not hesitate to assign them to the same period.

Figure 1 represents a small fragment of rush matting, a large piece of which was found on the floor of one of the cliff-houses of the Rio Mancos. (See Plate VI.) It is probably manufactured from a species of rush, *Scirpus validus*, that grows somewhat plentifully along the Mancos bottoms.

Figure 2 represents a bundle of small sticks, probably used in playing some game. They are nearly a foot in length, and have been sharpened at one end by scraping or grinding. They were found in one of the cliff-houses of the Mancos, buried beneath a pile of rubbish. The bit of cord with which they are tied is made of a flax-like fiber, carefully twisted and wrapped with coarse strips of *yucca* bark; beside this a number of short pieces of rope of different sizes were found, that in beauty and strength would do credit to any people. The fiber is a little coarser and lighter than flax, and was probably obtained from a species of *yucca*, which grows everywhere in the southwest.

Figure 3 is a very perfect specimen of stone implement found buried in a bin of charred corn in one of the Mancos cliff-houses (figure 1, Plate V).

It is 8 inches in length and  $2\frac{1}{2}$  inches broad at the broadest part; its greatest thickness is only  $\frac{1}{2}$  an inch. One face is slightly convex, while the other is nearly flat. The sides are neatly and uniformly rounded, and the edge is quite sharp. It is made of a very hard, fine-grained, siliceous slate, is gray in color, and has been ground into shape and polished in a most masterly manner.

Although its use is not positively determined, it belongs, in all probability, to a class of implements called "scrapers," which are employed by most savage tribes in the dressing of skins. This specimen may have been used for other purposes, but certainly not for cutting or striking, as the material is very brittle. The most conclusive proof of its use is the appearance of the edge, which shows just such markings as would be produced by rubbing or scraping a tough, sinewy surface.

Figure 4 represents a part of a *metate* or mill-stone. The complete im-

plement consists of two parts—a large block of stone with a concave surface, upon which the maize is placed, and a carefully-dressed but coarse-grained slab of stone for grinding. This slab is generally from 8 to 12 inches long by 3 to 6 wide, and from 1 to 2 inches thick. The specimen illustrated is made of black cellular basalt, and was found with many others at the ruined pueblo near Ojo Caliente, N. Mex. (Plate X.)

Figure 5 is a very much worn specimen of stone axe, which was found at an ancient ruin near Abiquiu, N. Mex. It is made of light-colored chloritic schist, and measures 2 inches in width by 3 in length.

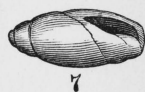
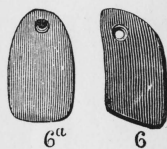
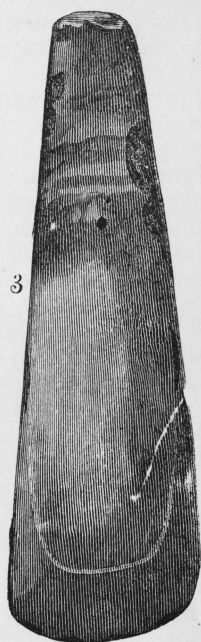
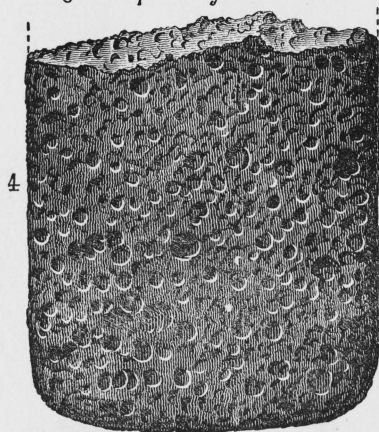
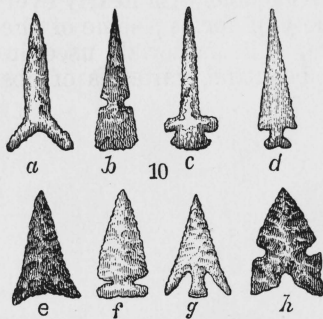
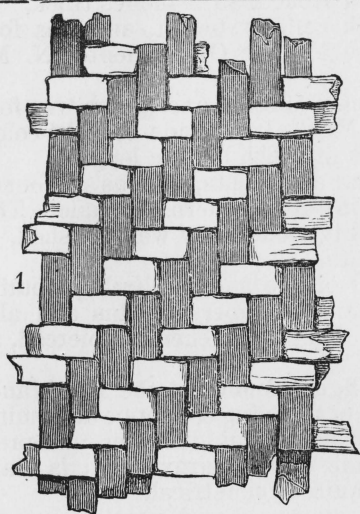
Figures 6 and 6a are specimens of ear-ornaments, such as are found in connection with very many of the ruins of Southern Colorado. These are made of fine-grained gray slate, only moderately well polished, and measure an inch and a quarter in length.

Figure 7 represents a marine shell of the genus *Olivella*, obtained probably from the Pacific coast. Large numbers of this and allied shells are found about these ruins. They are generally pierced, and were doubtless used as beads.

Figure 8 represents a small carved figure found on the Rio Mancos. It is made of hard gray slate. Its use or meaning cannot be determined.

Figure 9 represents a stone ring  $\frac{5}{8}$  of an inch in diameter, and probably intended for the finger. It is made of hard gray slate; is shaped like the usual plain gold ring, and is quite symmetrical.

Figure 10. Arrow-heads were found associated with nearly every ruin examined. They present a great variety of forms; some of the more striking of these are given in the figure. The materials used in their manufacture are principally the more beautiful varieties of obsidian, jasper, and agate.





# A NOTICE OF THE ANCIENT RUINS IN ARIZONA AND UTAH LYING ABOUT THE RIO SAN JUAN.

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BY W. H. JACKSON.

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In continuing the investigation, commenced last season, of the very interesting ruins scattered throughout the San Juan basin, I proceeded to Parrott City, a frontier mining-camp on La Plata River, where I procured the services of Harry Lee as guide and interpreter. Mr. E. A. Barber, naturalist and special correspondent of the New York Herald, was also of the party. Providing ourselves with the supplies which had been forwarded to this point via Tierra Amarilla, we started out late in July, journeying westwardly to that point on the Hovenweep from which we had turned back last year, and where we shall also resume our explorations.

The Hovenweep (a deserted valley) is a tributary of the McElmo, which, together with the wide-spreading arms of the Montezuma, drains into the San Juan all that portion of the country lying between the Mésa Verde and the Sierra Abajo, covering in the aggregate some two thousand five hundred square miles. Their labyrinthine cañons head close upon the Dolores on the north, and ramify the plateaus in every direction with an interminable series of deep, desolate gorges, and wide, barren valleys. There is not a living stream throughout this whole region. During the summer months water occurs in but very few places, generally in pockets, sometimes in springs, where the excess, if any, is soon swallowed by the hot and thirsty sands. The rainy season is in winter and the early spring months, when the water is more generously distributed, being then found in the many basins scattered over the bare tops of the mésas, as well as in the beds of the cañons, the lower temperature of the colder season preventing the rapid evaporation of summer and autumn weather. As a great proportion of the surface of this region is a bare bed of rock, with a soil in the lowlands nearly impervious to moisture, the winter showers soon gather their waters together in great floods in the main channels, and then, rushing down in a solid body, form those deep "washes" so characteristic of the country. But these torrents are short-lived, and it is only by noting the height of the drift-material lodged upon the trunks of the venerable cottonwoods bordering the banks that we can fully realize such great bodies of water ever having existed in so dusty a bed. Every cañon and valley has its corresponding wash, worn perpendicularly down through the dry, easily-eroded soil, forming circuitous but excellent pathways. In some valleys, where the drainage is considerable, these washes frequently attain a depth of from 30 to 40 feet, and are impassable for miles.

The intervening table-lands obtain a very nearly uniform height of 500 feet, running up to over 1,000 feet as we approach the Dolores divide. In the wider valleys the maximum is reached by successive steps, or benches, rising one back of the other, while in the narrow



cañons the ascent is more abrupt; the upper third of the escarpment being generally perpendicular, with the lower two-thirds composed of talus. Their summits and sides are usually clothed with a scrubby growth of piñon and juniper trees, increasing in density and size as we approach the divide on the north, while the valleys below sustain dense masses of sage-brush and greasewood, that, in some places, attain a height of from 10 to 12 feet. Vigorous, fresh-looking cottonwoods line the main channels, and are as deceptive to the thirsty traveler as a mirage. One may travel for miles in the parched bed of the wash at their feet, while overhead their wide-spreading branches cast a grateful shade, and yet not be able to find a drop of water anywhere in their vicinity.

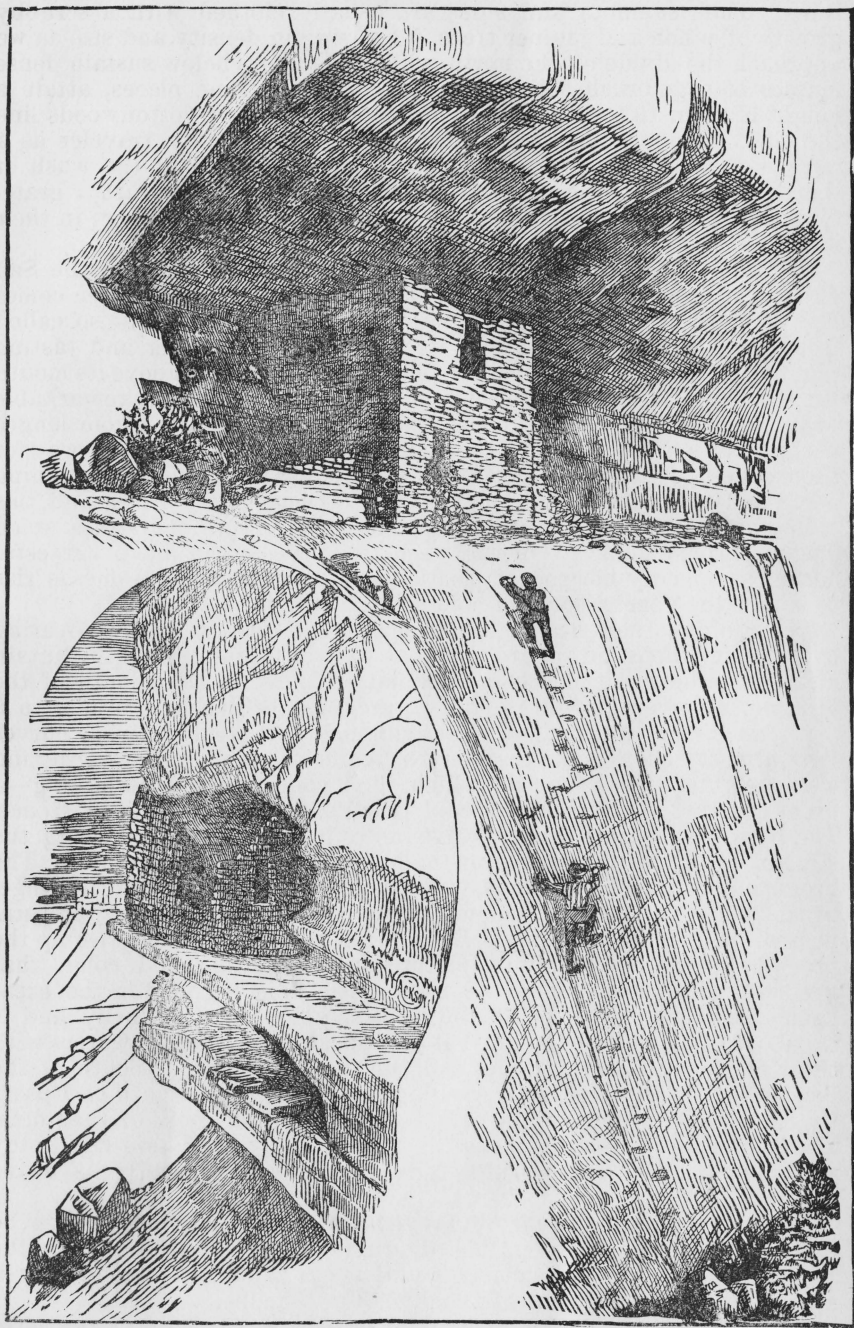
West of the Montezuma two or three small tributaries of the San Juan head from the southern face of the Sierra Abajo, and then comes Epsom Creek, rising among the plateaus farther to the west—so called from the water in one portion of its bed having the effect and tasting like that salt. For a distance of some twenty-five miles above its mouth the valley of this creek presents upon its eastern side a remarkable wall, some 400 feet in height, inaccessible throughout its whole length with the exception of one place where the Indians have made a way for themselves. It is caused by an immense fold in the sandstones, running north and south in a semicircular line, for some forty miles, and this valley has been eroded from that portion of it where the strata stood nearly perpendicular. On the west the beds sweep up in graceful curves to a nearly horizontal position, upon which isolated mesas rise up above the general level in bold relief against the sky.

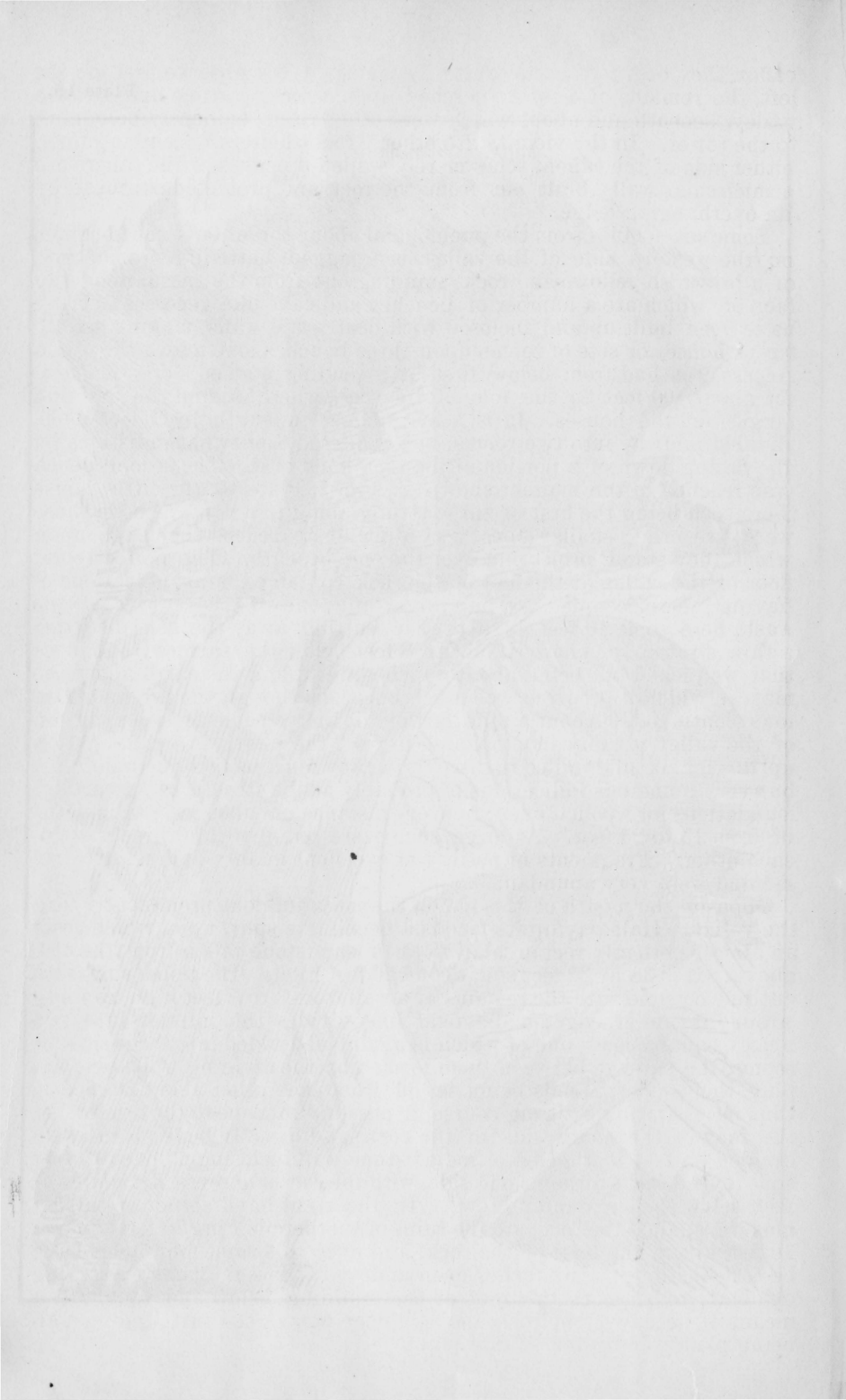
The Rio San Juan drains all of this great interior basin, covering over twenty thousand square miles, as well as several great mountain masses bordering it nearly all around. It has at the mouth of the McElmo an average width of fifty yards, and a depth of from 4 to 6 feet; its current moving somewhat sluggishly in great sweeping curves that almost touch upon themselves again. The water is warm, and well freighted with the soil which it is continually undermining—a great contrast to the clear, ice-cold tributaries which give it existence. The bottoms are from three to five miles in width, and, bordering the stream, covered with dense growths of cottonwoods and willows. The broad and fertile alluvial lands, well covered with grass, and the low sage-brush benches bordering them, will undoubtedly prove a rich agricultural possession at no distant day. Back of all, upon either hand, rise up the precipitous sandstone bluffs, picturesque in outline and color, that gradually close down upon the river until it is engulfed in the great cañon commencing just below the mouth of the Rio De Chelly, and is then lost to all knowledge until it re-appears mingling its waters with those of the still more turbid and turbulent Colorado. South of the San Juan, the Rio De Chelly, coming in opposite the mouth of Epsom Creek, does not differ in its cañon character from those of the north. The bordering plateau, however, is more massive and less cut up by side cañons. The same aridity prevails throughout nearly its whole length.

Having thus superficially surveyed the region on which are to be found a vast number of prehistoric ruins, we will now return to the Hovenweep and examine, in such detail as our rapid reconnaissance will allow, the more prominent of the abundant remains.

Starting from the pueblo of the Hovenweep, described on page 30 of Bulletin No. 1, second series, we do not find in the immediate neighborhood any other ruins of importance; but a short distance down the







cañon they begin to occur quite frequently. We observe first, on the left, the remains of a tower perched upon a rock, jutting out into the valley, beneath and about which were other ruins, evidently belonging to the tower. In the vicinity are other "rock-shelters," occurring upon either side of the cañon, some merely walled-up caves, while others are semicircular walls built out from the rock and protected overhead by an overhanging ledge.

Some seven miles from the pueblo, and about three above the McElmo, on the western side of the valley, is a jagged, butte-like promontory, of a brownish-yellow sand-rock, standing out from the *mésa*, upon the face of which are a number of benches and cave-like recesses. These have been built up and inclosed with neatly-laid walls, making six different houses or sets of rooms upon three benches, one above the other. Access was had from below, first by ascending a steep slope of *débris* for about 100 feet to the foot of the rock, where we find the first and largest of the houses. It is some 12 feet in length by 5 feet deep, divided midway into two rooms, but rendered somewhat indistinct by the falling-down of a portion of the rock back of it. The second bench was reached in the manner shown in Fig. 2, Plate 15, the little house there seen being the first of three strung along in a row. Above these were two other similar ones, very difficult to reach, the ledge upon which they stand projecting over the one beneath. The perfectly flat floor of the valley at the foot of the rock contained faint indications of having been occupied by buildings; and one of the curves of the wash, here some 10 feet in depth, in cutting away the soil disclosed a thin stratum of charcoal about 6 feet below the surface; one piece that we picked out being about 3 inches thick, and the earth about the mass in which it occurred was much burnt, as though the fire had been long continued. About a mile farther down we came to an expansion of the valley with a cañon opening in from the west. An examination up this for six miles failed in discovering any remains of stone buildings, but very numerous indications of probably adobe structures, or earthen foundations for wooden ones; in every instance circular, with a diameter of from 15 to 25 feet. A dozen such were found within three miles of each other. Fragments of pottery of excellent quality and neatly ornamented were very abundant.

Opposite the mouth of this cañon the *mésa* juts out prominently into the valley. Half-way up its face is a bench-like spur, upon which rests an almost perfectly rectangular block of sandstone fallen from the cliff above. It is 38 by 32 feet square and 20 feet high. The upper surface is entirely covered with the remains of a wall from 3 to 5 feet high, running around its outer edge; a diagonal line divides the interior into two nearly equal spaces, one of which is again subdivided into three smaller rooms, the passage between them formed by the dividing walls overlapping, their opposite ends being set off from each other about 20 inches, thus necessitating a zigzag course in passing from one to the other. At the foot of the south side of the rock, and directly beneath the subdivided half of it, there is a line of stone wall inclosing a space 40 feet square, the rocks forming one side, with the center depressed a couple of feet below the surrounding level. In the right-hand corner of this inclosure, against the rock, are the ruins of another building 20 feet square; 10 feet above the base of the rock, and over this ruin, four holes have been drilled into it, six inches deep and four inches in diameter, serving evidently to support the roof of the building below and to afford a means of access to the rock above, a door-way in the surrounding wall being plainly indicated at that point.

Two miles farther down the McElmo comes in at nearly right angles from the east, and upon the point of the *mésa* included within the angle thus formed by the two cañons or valleys—we cannot call them streams—are a group of ruins similar to ones above, but much less regularly built. An interesting inscription occurs upon the under face of a large rock that supports a ruin, covering some 60 square feet of surface; animals resembling goats, lizards, human figures, and many hieroglyphical signs abound. While sketching these our attention was called to the top of the *mésa* by Mr. Holmes (who has accompanied us thus far with his division on his way to the San Juan, and who had ascended to the summit for the purpose of sketching), to some very interesting remains he had discovered there.

The perpendicular scarp of the *mésa* ran around very regularly, 50 to 100 feet in height, the talus sloping down at a steep angle. On cave-like benches at the foot of the scarp, is a row of rock shelters, much ruined, in one of which was found a very perfect polished stone implement. Gaining the top with some difficulty, we found a perfectly flat surface, 100 yards in width by about 200 in length, separated from the main plateau by a narrow neck, across which a wall had been thrown, but now nearly leveled. Very nearly the entire space fenced in by this wall was covered by an extended series of small squares, formed by thin slabs of sand-rock set up edgewise. (Fig. 3, Plate 20.) All were uniformly about 3 by 5 feet square, arranged in rows, two and three deep, and adjusted to various points of the compass, but there were also a few circles disposed irregularly about the inclosed area, each about 20 feet in diameter, and formed of these same squares, leaving a circular space of 10 feet diameter in the center. These squares occur indiscriminately over the whole region that has come under our observation, upon the *mésa* tops and in the valleys, all of the same general shape and size, very seldom accompanied by even the faintest indication of a mound-like character, but nearly always in groups. We have always supposed them to be graves, but have not as yet found any evidence that would prove them such. Some that we excavated to a depth of 5 and 6 feet, into a solid earth that had never been disturbed, rewarded us with not the faintest vestige of any remains, excepting, in nearly every case, a thin scattered layer of bits of charcoal from 6 to 18 inches beneath the surface. In one instance, near the *Mésa Verde*, the upright slabs of rock which inclosed such a square were sunk 2 feet into the earth and projected 6 inches above it. In another, was found a mass of charred matter that promised to throw some light upon the subject, but a chemical analysis by Dr. Endlich proved it to be simply charred juniper-wood, without perceptible admixture of animal matter. In the present instance, as the soil was thin and sandy, in some places blown entirely off, leaving the bare bed-rock exposed, we excavated several of these with pick and shovel, there being only from 12 to 18 inches of earth to remove, but in no case finding anything more than the scattered charcoal spoken of above. In some, the earth was calcined, as though a fire had been made within them, while in others there was no vestige of a fire beyond the presence of the charcoal. The question very naturally arises as to whether they might not have been cremationists, a supposition that would have some appearance of likelihood, could we but find any trace of human remains among the bits of charred wood. Scattered over the whole surface of this *mésa* were a great many flint-chippings, from among which we picked up a number of very beautiful arrow-points. As the summit commands a wide sweep of country, it is not unlikely that sentries of old beguiled their tedious watch with arrow-making.

From the camp at the pueblo Mr. Chittenden, of Mr. Holmes's division, rode up the Hovenweep some eight miles, to where it divided equally into two branches, and upon the point between these forks he found the remains of a round tower, commanding an extended view down the main cañon. No other ruins were noticed.

The parties, under the guidance of Mr. Gardner, camped one night near the head of the Hovenweep, and found there an important group of ruins, described as follows by Mr. Adams:

"The first of these we met are situated at the upper edge of the side of the cañon, about one-third of the distance from the top, on a ledge about 300 feet long and 50 wide. On this small space were crowded some 40 houses, as well as we could judge from the ruins. The general plan of structure was circular, varying in size, but generally from 10 to 15 feet in diameter. The stone was dressed to three times the size of an ordinary brick and in the same shape. \* \* \* The whole arrangement of the little town was for defense; perched up high above, on the summits of boulders, were little watch-towers, which commanded the plateau above."

Between the Montezuma and the Hovenweep is a high plateau running north and south, from the San Juan to the Dolores; the southern portion a level sage-covered plain, while the northern is more undulating and covered with junipers and piñon pine. Upon this we found the remains of many circular towns, generally occupying slight eminences, and in but one or two cases, as far as we observed, were so entirely demolished that not one stone remained upon another. In one of these exceptions, about half the circumference only of a tower remained, 15 feet in height and of average masonry. Broken pottery was but sparingly scattered about, showing them not to have been occupied as much as the very similar remains in the valleys below. This mesa, averaging 500 feet in height above the surrounding country, does not contain a spring or drop of water, except such as may remain in the holes in the rocks after a shower. The soil is thin and sandy, blown off clean to the rock-bed in places, yet what there is is well grassed, and sage-brush flourishes luxuriantly. As cultivation was out of the question, and permanent residence improbable, it is very likely these towns were lookouts or places of refuge for the shepherds, who brought their sheep or goats up here to graze, just as the Navajos used to, and the Utes do at the present time. Rude huts of a later day are now found scattered over its surface, by the side of the washes where water would be likely to collect.

In traveling down the San Juan, from the mouth of the McElmo, there are not within the first ten or twelve miles any ruins that would claim attention upon a rapid reconnaissance. Indistinguishable mounds of earth frequently occur along the bottom lands, surrounded by the ever-present fragments of pottery, showing them to be the sites or the remains of habitations; the quantity of pottery, domestic utensils, and arrow-points helping somewhat to determine the length of time they were occupied.

Crossing the mouth of the broad sandy wash of the Montezuma, that is here bordered with groves of brilliantly-green cottonwoods along its arid course, we pass about three miles below, and find camp under a grove of patriarchal trees within a well-grassed bend of the river. A wide gravelly bench, some 50 feet in height, and running back to the bluff line, rises up abruptly from the bottom lands; a few rods below camp, the river in its meandering sweeps close to the foot of this bench, producing an almost perpendicular face. Upon the top of the bench at

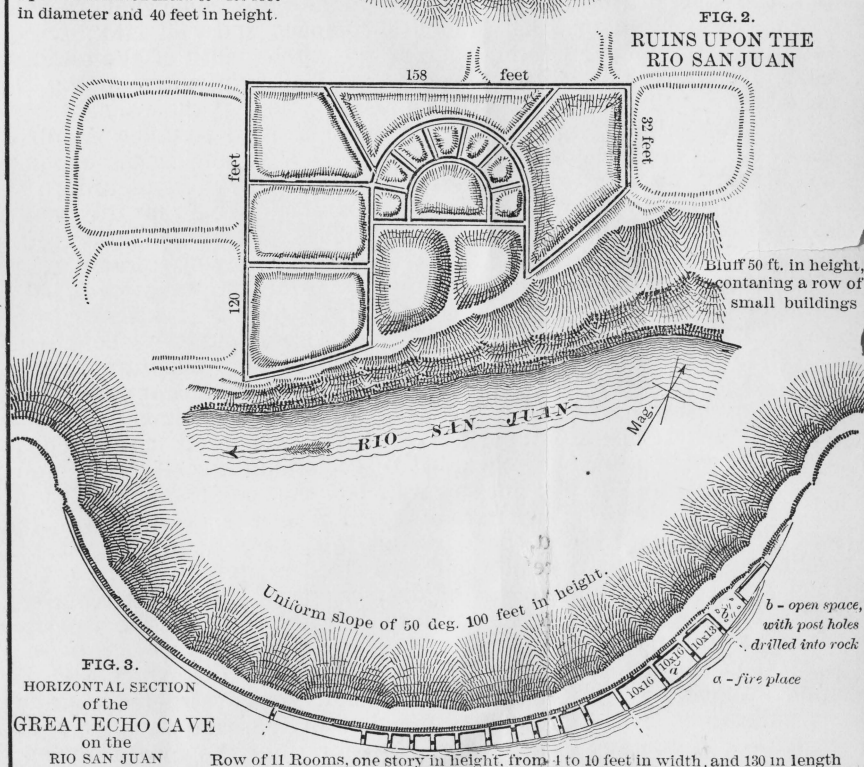
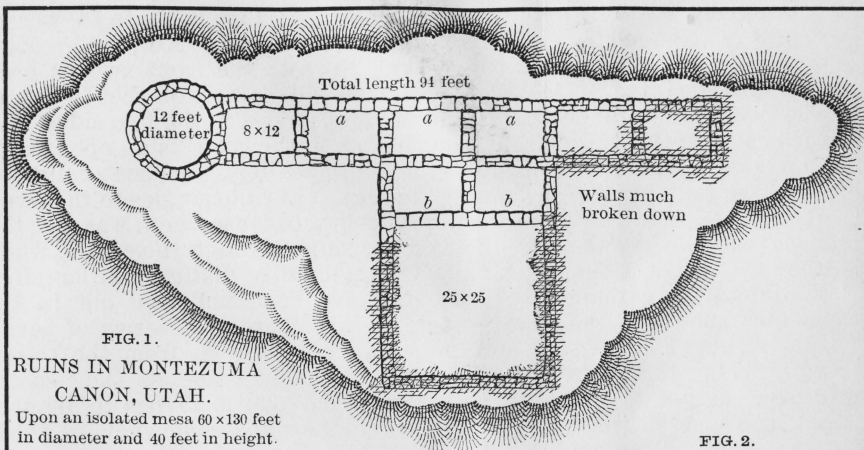


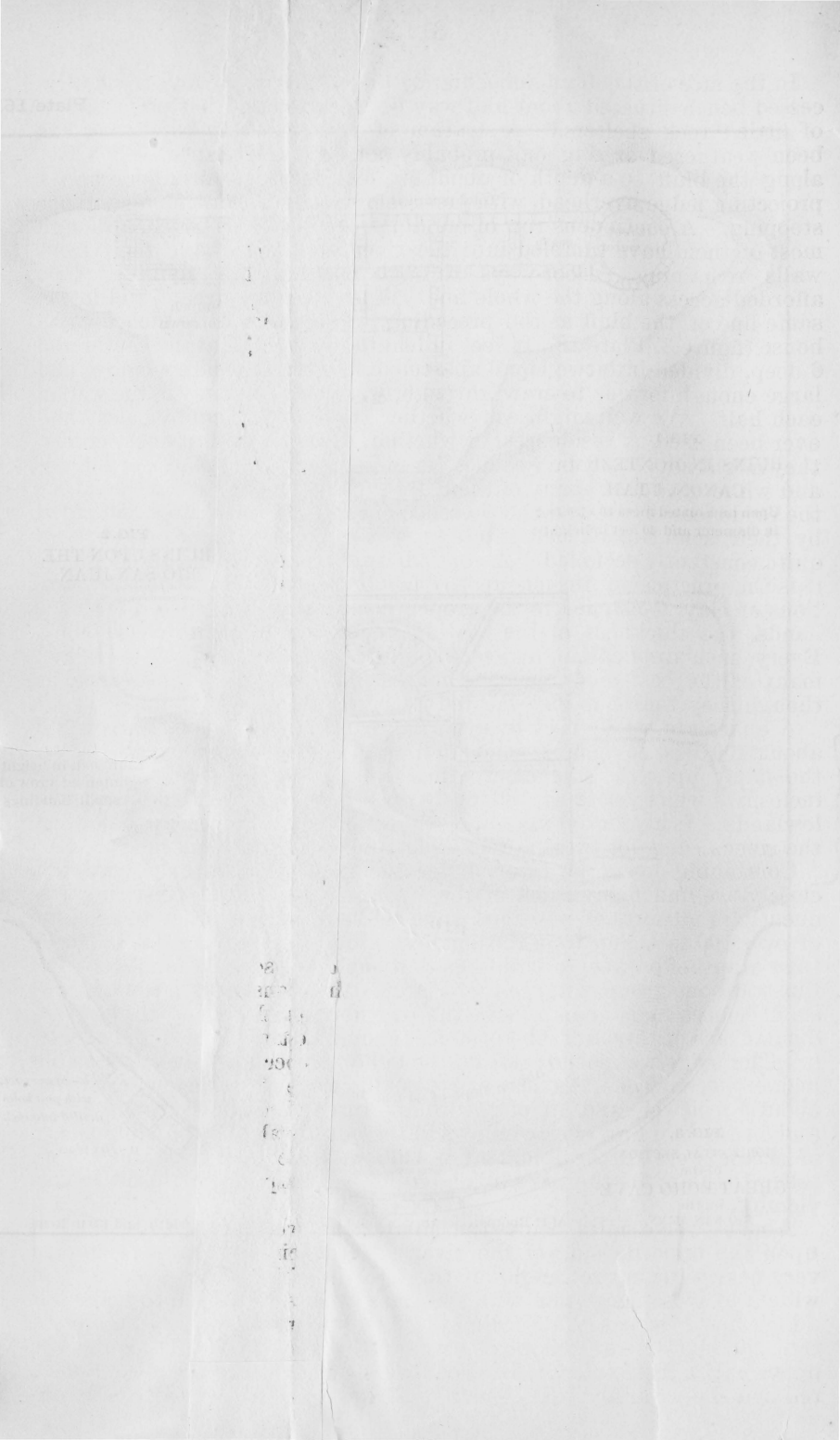
this point, overlooking the river, are the ruins of a quadrangular structure of peculiar design.

Referring to the ground-plan, as shown in Fig. 2, Plate 16, we see that it is arranged very nearly at right angles to the river, its greatest depth on the left, where it runs back 120 feet; the front sweeps back in a diagonal line, so that the right-hand side is only 32 feet in depth. The back wall is 158 feet long, and at right angles to the two sides. In the center of the building, looking out upon the river, is an open space 75 feet wide, and averaging 40 feet in depth, its depressed center divided nearly equally by a ridge running through it at right angles to the river. We judged it to have been an open court, because there was not the least vestige of a wall in front, or on the ridge through the center, while upon the other three sides they were perfectly distinct; although it is difficult to explain why it should have been hollowed out in the manner shown in the plan. Back of this court is a series of seven apartments of equal size, springing in a perfect arch from the heavy wall facing the court, leaving a semicircular space in the center, 45 feet across its greatest diameter. Each one is 15 feet in length, and the same in width across its center, the walls somewhat irregular in thickness, but averaging 20 inches, compact, and well laid. On the left are three rooms extending across the whole width of the building, each averaging 45 by 40 feet square; on the right only one was discernible. Back of the circle, our impression was that the walls diverged in the manner shown in the plan, although there is so much confusion resulting from the heaping up of the *débris* that much must be left to conjecture. There is also a slight shadow of doubt in regard to the wall facing the river on the right; it is barely possible that it extended somewhat farther out, although there is here a steep inclination to the brink of the bluff, and that it has become entirely obliterated by its foundations giving way. The remains of the wall above, however, led us to believe that it had been originally built in the way it is shown in the plan. Extreme massiveness is indicated throughout the whole structure by the amount of *débris* about the line of the walls, forming long rounded mounds, 4 to 5 feet high, with the stone-work cropping out, 20 to 24 inches in thickness. Portions of the outer wall have fallen outward almost in one solid piece, the stones remaining spread out in much the same order they occupied in the standing wall. The stones were of fair size, but yet not so large but that one man could handle the largest of them. They were obtained from the neighboring bluff, and probably undressed but broken into very nearly rectangular blocks, so that when carefully laid and dressed up with adobe cement they would have all the effect of dressed stone. Their extreme age, which has crumbled a great many into dust and rounded the asperities of all into shapeless boulders, renders any conjecture upon this point somewhat uncertain. Where portions of the undisturbed wall did appear above the rubbish it showed a solid, well-constructed masonry. No indications whatever could be found of any passage-ways, nor could we expect to find any so near their base, for all of the apartments were probably entered by ladders, the same as in other buildings of this order that we have found in other localities.

Upon either side and back of this building were low, indefinite lines of earth, not more than 12 to 18 inches above the surrounding surface, inclosing areas from 40 to 60 feet in diameter, which were probably corrals for domesticated animals, the walls being composed of adobe or turf brought from the valley below, and which would, of course, wash down to a barely perceptible ridge.







In the face of the bluff immediately under this ruin, and upon a recessed bench situated about half-way between top and bottom, is a row of little "rock shelters." A stratum of a rotten shaly sandstone has been weathered or dug out, probably both, for a distance of 300 feet along the bluff, to a depth of about six feet, leaving a firm floor and a projecting ledge overhead, with just room enough to walk along without stooping. A continuous row of buildings occupied this bench, although most of them have tumbled into the river, and none have their front walls remaining. Door-ways through each of the dividing walls afforded access along the whole line. A few rods up stream, and in the same line of the bluff as the preceding, was another little niched cave-house (figure 3, Plate 18), 14 feet in length, 5 feet high at the center and 6 deep, divided into two equal apartments; a small square window, just large enough for one to crawl through, was placed midway in the wall of each half. We well might ask whether these little "cubby-holes" had ever been used as residences, or whether, as seems at first most likely, they might not simply be "caches," or merely temporary places of refuge; and while, no doubt, many of them are such, yet in the greater majority the evidences of use and the presence of long-continued fires, indicated by their smoke-blackened interiors, would prove them to have been quite constantly occupied. Among all dwellers in mud-plastered houses it is the practice to freshen up their habitations by repeated applications of clay, moistened to the proper consistency, and spread with the hands, the thickness of the coating depending upon its consistency. Every such application makes a building appear perfectly new, and many of the best-sheltered cave-houses have just this appearance, as though they were but just vacated.

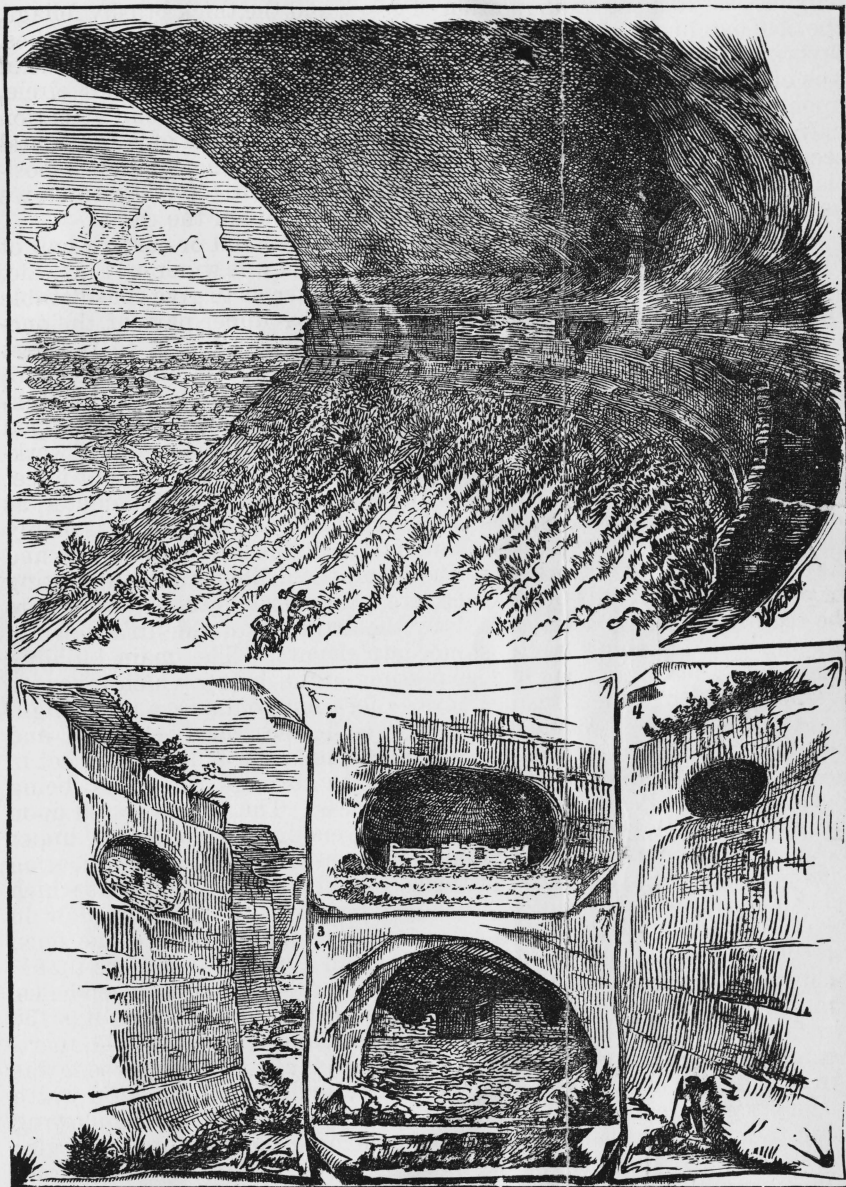
A quarter of a mile back over the flat level bench, is a long narrow hill about 100 feet in height, commanding an extended view up and down the valley, upon the summit of which is one of the circular, mound-like inclosures which occur so frequently upon both the highlands and the lowlands. It evidently has some connection with the group below on the river's edge, for there are no other ruins within several miles.

Continuing down the river, under the great bluffs which border it closely, we find many ruins of the "rock-shelter" kind occurring frequently in all sorts of positions, from the level of the valley to a height of over 100 feet, and from the smallest kind of a "cache," not larger than a bushel-basket, to buildings that sheltered several families. We illustrate one group in figure 4, of Plate 18, that consists of a row of three small houses built upon a ledge running horizontally along the perpendicular face of the bluff, about 60 feet above the trail immediately below it. The ledge was so narrow that the buildings occupied every available inch of its surface. As near as we could judge from below, each was about 5 feet wide and 10 long, with apertures through their end walls, and in the two first ones windows in the outer wall. No possible means of access were discernible, and if ladders were ever used they were taller than any of the trees available for the purpose that grow in this vicinity.

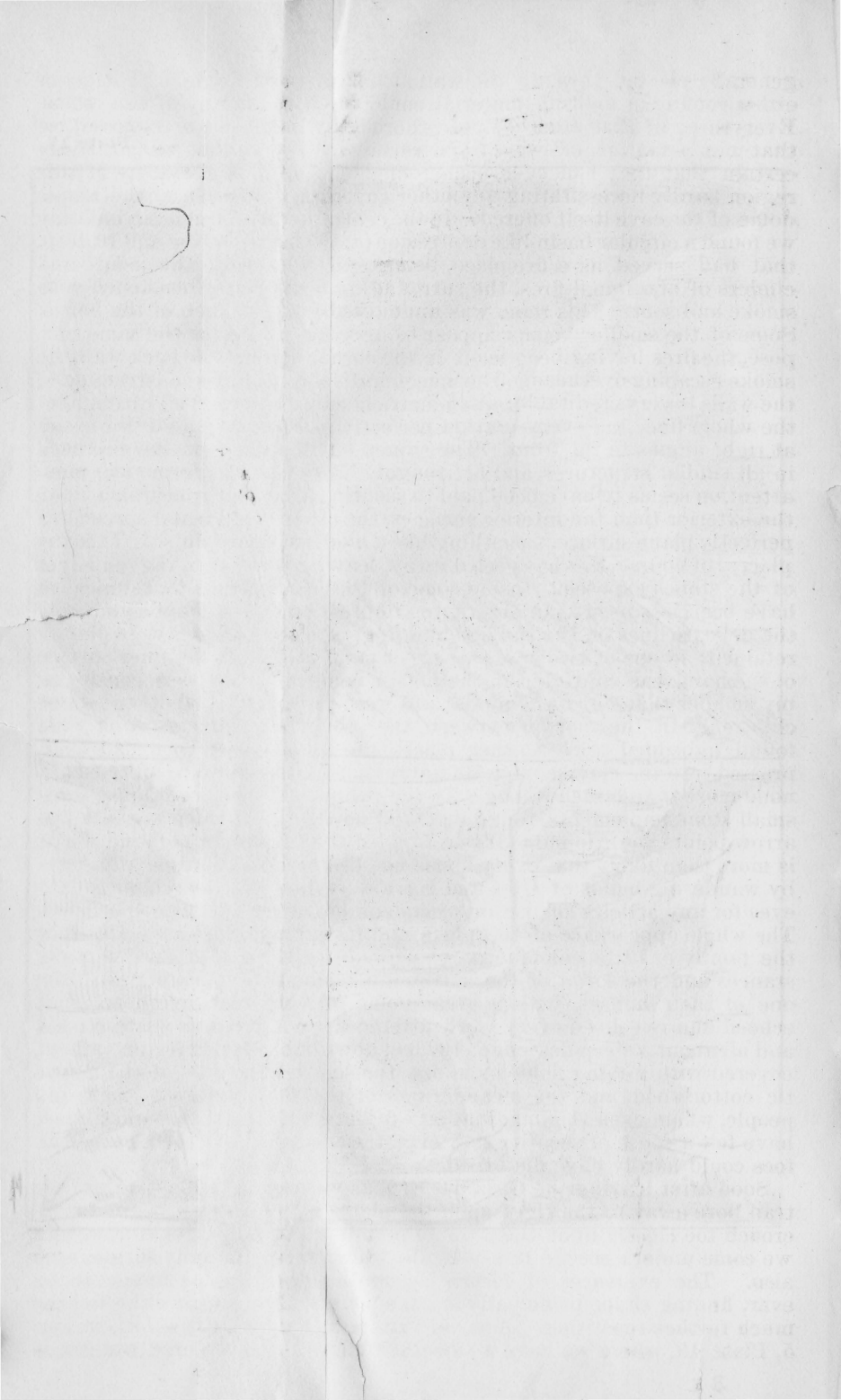
About twelve miles below the Montezuma we discovered, far away upon the opposite side of the river, a great circular cave, occupying very nearly the entire height of the bluff in which it occurred, and in which, by close inspection with the glass, we were enabled to make out a long line of masonry. Forging the river and approaching it, we found that the bluff-line at this place was a little over 200 feet in height, the upper half a light-colored, firm, massive sandstone, and the lower a dark red and shaly variety. The opening of the cave is almost perfectly cir-

cular, 200 feet in diameter, divided equally between the two kinds of locks, reaching, within a few feet, the top of the bluff above and the level of the valley below. It runs back in a semicircular sweep to a depth of 100 feet; the top is a perfect half dome, and the lower half only less so from the accumulation of *débris* and the thick brushy foliage, the cool dampness of its shadowed interior, where the sun never touches, favoring a luxuriant growth. A stratum of harder rock across the central line of the cave has left a bench running around its entire half circle, upon which is built the row of buildings which caught our attention half a mile away. In figure 3, Plate 16, we have a plan of a horizontal section of the cave, showing the ledge and the manner of the disposition of the buildings upon it; in the drawing at the top of Plate 17, we have a view of them as seen from the opposite side of the cave.

It will be seen that the houses occupy the left hand or eastern half of the cave, for the reason, probably, that the ledge was wider on that side, and the wall back of it receded in such a manner as to give considerable additional room for the second floor, or for the upper part of the one-story rooms. It is about 50 feet from the outer edge in to the first building, a small structure 16 feet long, 3 feet wide at the outer end, and 4 at the opposite end; the walls, standing only 4 feet on the highest remaining corner, were nearly all tumbled in. Then came an open space 11 feet wide and 9 deep, that served probably as a sort of workshop. Four holes were drilled into the smooth rock floor, about 6 feet equidistantly apart, each from 6 to 10 inches deep and 5 in diameter, as perfectly round as though drilled by machinery. We can reasonably assume that these people were familiar with the art of weaving, and that it was here they worked at the loom, the drilled holes supporting its posts. At *b*, in this open space, are a number of grooves worn into the rock in various places, caused by the artificers of the little town in shaping and polishing their stone implements. The main building comes next, occupying the widest portion of the ledge, which gives an average width of 16 feet inside; it is 48 feet long outside, and 12 high, divided inside into 3 rooms, the first two  $13\frac{1}{2}$  feet each in length, and the third 16 feet, divided into two stories, the lower and upper 5 feet in height. The joist holes did not penetrate through the walls, being inserted about six inches, half the thickness. The beams rested upon the sloping back-wall, which receded far enough to make the upper rooms about square. Window-like apertures afforded communication between each room, all through the second story, excepting that which opened out to the back of the cave. There was also one window in each lower room, about 12 inches square, looking out toward the open country, and in the upper rooms several small apertures not more than 3 inches wide were pierced through the wall, hardly more than peep-holes. The walls of the large building continued back in an unbroken line 130 feet farther, with an average height of 8 feet, and divided into 11 apartments, with communicating apertures through all. The first room was  $9\frac{1}{2}$  feet wide, the others dwindling down gradually to only 4 feet in width at the other extremity. The rooms were of unequal length, the following being their inside measurements, commencing from the outer end, viz:  $12\frac{1}{2}$ ,  $9\frac{1}{2}$ , 8,  $7\frac{1}{2}$ , 9, 10, 8, 7, 7, 8, 31 feet; the ledge then runs along, gradually narrowing, 50 feet farther, where another wall occurs across it, after which it soon merges into the smooth wall of the cave. The first of these rooms had an aperture leading outward large enough to crawl through; the wall around it had been broken away so that its exact size could not be determined; all the others, of which there were about two to each room, were mere peep-holes, about 3 inches in diameter, and









generally pierced through the wall at a downward angle. No sign of either roofing or flooring material could be found in any of the rooms. Everything of that kind has been thoroughly burnt out or removed, so that not a vestige of wood-work remains. We cannot be positively certain that they had ever been roofed, the mild temperature of this region hardly necessitating any other covering than such as the ample dome of the cave itself offered. In the central room of the main building we found a circular basin-like depression (*a*), 30 inches across and 10 deep, that had served as a fire-place, being still filled with the ashes and cinders of aboriginal fires, the surrounding walls being blackened with smoke and soot. This room was undoubtedly the kitchen of the house. Some of the smaller rooms appear to have been used for the same purpose, the fires having been made in the corner against the back wall, the smoke escaping overhead. The masonry displayed in the construction of the walls is very creditable; a symmetrical curve is preserved throughout the whole line, and every portion perfectly plumb; the subdivisions are at right angles to the front. The stones employed are of the size used in all similar structures, and are roughly broken to a uniform size; more attention seems to have been paid to securing a smooth appearance upon the exterior than the interior surfaces, the clay cement being spread to a perfectly plane surface, something like a modern stucco finish. In many places, of course, this has peeled away, leaving the rough, ragged edges of the stones exposed. Inside some of the subdivisions that appear to have been less used than others, the impressions of the hands and even the delicate lines on the thumbs and fingers of the builders were plainly retained; in one or two cases a perfect mold of the whole inner surface of the hand was imprinted in the plastic cement. They were considerably smaller than our own hands, and were probably those of women or children. In the mortar between the stones several corn-cobs were found imbedded, and in other places the whole ear of corn had been pressed into the clay, leaving its impression; the ears were quite small, none more than 5 inches long. In the rubbish of the large house some small stone implements, rough indented pottery in fragments, and a few arrow-points were found. It is a wonder that anything is found, for it is more than likely that every house has been ransacked time after time by wandering bands of Utes and Navajos, who would search with keen eyes for any articles of use or ornament left after the first spoliation. The whole appearance of the place and its surroundings indicates that the family or little community who inhabited it were in good circumstances and the lords of the surrounding country. Looking out from one of their houses, with a great dome of solid rock overhead, that echoed and re-echoed every word uttered with marvelous distinctness, and all about a steep descent of 100 feet down to the broad fertile valleys, covered with waving fields of maize, the scattered groves of the majestic cottonwood, and the meanderings of the Rio San Juan, these old people, whom even the imagination can hardly clothe with reality, must have felt a sense of security that even the incursions of their barbarian foes could hardly have disturbed.

Soon after leaving the Casa del Éco, as we named the last ruins, our trail bore away to the right upon the plateaus, which now begin to encroach too closely upon the river to permit us to follow its course, and we come under a second line of bluffs, which were gradually surmounted also. The evidences of former occupation continue as numerous as ever, finding shape principally in cave-houses, all too near alike to bear much further repetition. A novel feature at one point is shown in Fig. 5, Plate 18, where we have a smooth bluff of cream-colored sandstone

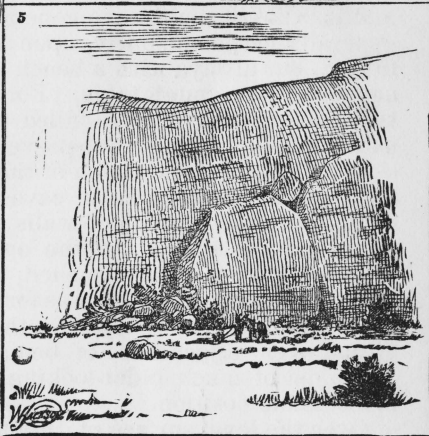
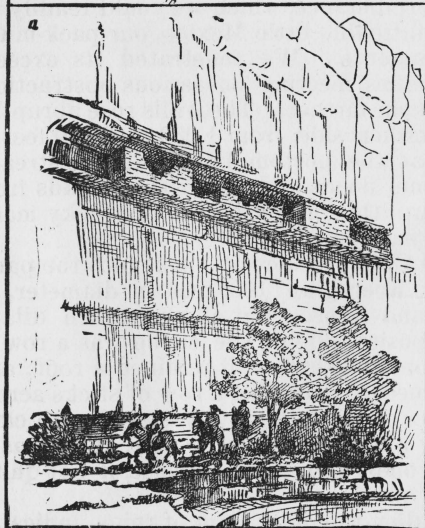
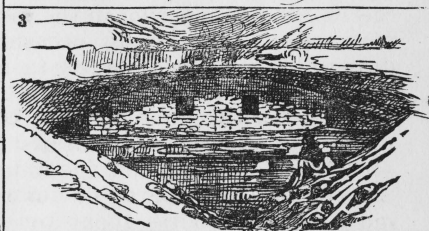
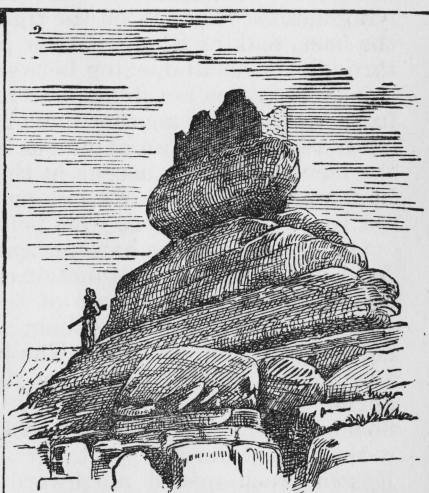
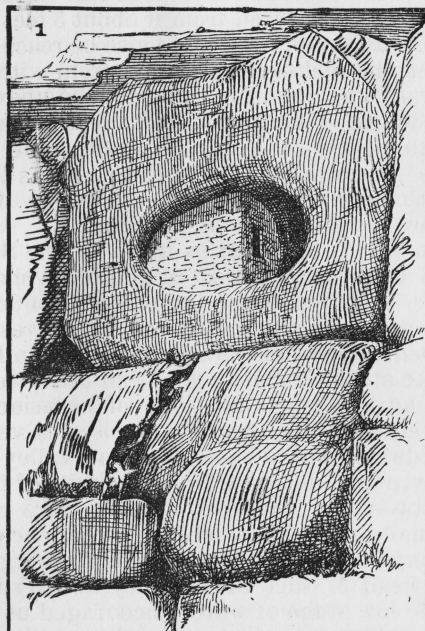
about 150 feet high, with hardly a seam on its surface, over which has been cut a series of steps. Upon the pile of *débris* at the left are the ruins of some structure that had been built just beneath the line of foot-steps, and was evidently placed there as an approach to them, as they only came down to within about 12 feet of the bottom. The large slab of rock lying against the bluff on the right was separated from it about 3 feet at the base, making a long, narrow passage-way, that could also be reached through the small opening between the rocks on the right; from within this place it was not difficult to reach the round boulder lodged above, from which starts another line of steps. The surface of the rock has worn away to such an extent as to nearly entirely obliterate some of the holes, rendering ascent, at the present time, impossible; and as the bluff was inaccessible for two or three miles upon either side, we did not reach the top or see from below any evidences of building.

Our trail over the bare plateau finally brought us down to the San Juan again, just at the junction of Epsom Creek with it, and but a short distance above the mouth of the Rio De Chelly, where we found a pleasant park like valley, about a mile in length, bordered by groves of cottonwood and willows. The beds of Epsom Creek and the Rio De Chelly were both perfectly dry, like all the tributaries of San Juan west of the Mancos, although in the latter were indications of occasional flooding, some of the deeper pockets retaining shallow pools of a very red muddy water. Upon every side—except where the broad valley of Epsom Creek opened northwardly, with the deep blue summits of the Sierra Abajo appearing in the vista—steep rugged bluffs of bare red rock rose up, weathering occasionally into sharp needle-like pinnacles, discernible for long distances in any direction. The San Juan emerged from a considerable cañon at the head of this little valley but to sink into a still greater one below. The low stage of water encouraged us to explore this lower cañon for a short distance, which we could readily do upon our riding-animals, the indefatigable little Mexico, our pack-mule, carrying the photographic instruments. We penetrated its exceedingly tortuous course about ten miles, meeting no serious obstruction, and it is likely could have gone much farther. The walls rose abruptly, generally perpendicularly, upon either side, from 1,000 to 2,000 feet in height, but always with a bench at the bottom bordering the stream, covered with a rough talus. Former floods and the drifting sands from the plateau above have filled up the interstices in the rocky mass, smoothing the way over them very considerably.

In the walls of the cañon of the Chelly, where it opens into the park, are several great circular caves, averaging 100 feet in diameter, in which were the remains of walls and houses, but all very much dilapidated. Upon a ledge on the opposite side of the cañon was a row of four houses, not easily reached, one of which still retained a roof; and in another case, a shelter was formed by inclining a row of sticks across the opening of the cave, with the outside thickly plastered with clay. It had every appearance of being a more recent structure, yet it was in the midst of much older-looking ones, and in an almost, if not quite, inaccessible position.

Over the level surface of the valley the older form of ruins, indicated principally by broken pottery, occurred in several places, and also, on a bench bordering the San Juan, just above Epsom Creek, were a number of small squares arranged in circles, that we have heretofore assumed to be places of sepulture.

In going southward, up the Chelly, we find it necessary to avoid the cañons and make a detour to the right, crossing a rugged depression in





the line of bluffs, to the valley of a small tributary, then over another divide across the upturned edges of the great fold spoken of in the first part of this article, to quite an expansion of the valley of the Chelly, about one mile square, covered with sage-brush and drifted sand, on the upper or right-hand side of which we are fortunate enough to find two springs of cool, fresh water, a most delicious luxury where the temperature of the water of the San Juan was 80 degrees, and the coldest to be had, and the temperature of the atmosphere away up in the hundreds during the day-time.

The surface of this valley, or small plain, contains indications of old ruins, about which we picked up many arrows, knives, and other stone implements, with the ever-present pottery. The wash of the Chelly skirts one side of the valley, with perpendicular bluffs 200 to 400 feet high, closely bordering its other bank. Above and below the opposite bluffs rise up again, throwing the wash into deep cañons. An examination of the exceedingly tortuous course of the wash and its accompanying bluff-line for a distance of 5 miles up and down revealed but one ruin (Plate 19), a very important and interesting one, however.

This cave-town occurs in a great bend of the encircling line of bluffs, where the wash makes a wide detour, perched upon a recessed bench about 70 feet above the valley, and overhung by a solid wall of massive sandstone extending up over 200 feet farther. The left-hand side of the bench supporting the buildings sweeps back in a sharp curve about 80 feet under the bluff, and then gradually comes to the front again until, on the extreme right hand, the buildings are built upon a mass of *débris*, but partially protected overhead. The total length over the solidly-built portion of the town is 545 feet, with a greater width in no place of more than 40 feet. There are somewhere in the neighborhood of 75 rooms upon the ground-plan, with some uncertainty existing as to many of the subdivisions on the right hand in the vicinity of *d* and *e*; but in the cave-built portion every apartment was distinctly marked. Midway in the town is a circular room of heavily and solidly built masonry, that was probably intended for an *estufa* or council-hall; that is, if we can reasonably assume any similarity in the methods of building or worship to those of the Pueblos of New Mexico. Starting from this *estufa* is a narrow passage running back of the line of houses on the left to the two-story group, *a*, where it ends abruptly, further access being had through the back row of rooms, or over the roofs of the lower front row, probably the latter, for it is likely that these roofs served as a platform from which to enter the rooms back of it. At the extreme end a still higher ledge occurs, with the overhanging wall coming down close over it, its outer edge inclosed by a wall, and a little store-room in its farther corner; it was reserved, probably, as an out-door working-room. All the buildings of this half are of one story, with the exception of the group *a*, the residence probably of the chief or of some other important family in the community. The rooms just back of it are the store-rooms of the family, where the corn and squashes were put away for the winter's consumption. At the place marked *b*, near these store-rooms, there are two half-round inclosures of stone-work, that are very likely the remains of small reservoirs or springs. The rock back of them is dug out beneath, and had, even in the dry season, when we were there, a damp appearance, as though water was not far removed, and might easily be coaxed to the surface. The front line of wall of this left side of the town is built upon a steep angle of smooth rock, with the interior of the apartments filled up with earth so as to make their floors level, bringing them a little



below the passage-way. In two or three instances, as shown in the plan, the front wall has given way, precipitating all but the back wall to the bottom of the cliffs. Holes have been drilled into the rock in a few places beneath the walls, evidently to assist in retaining them in their places.

The whole front of this portion of the town is without an aperture, save very small windows, and is perfectly inaccessible, both from the solidity of the wall and the precipitous nature of the foundation-rock beneath it. Admittance was probably gained from near the circular building in the center, by ladders or any other well-guarded approach over the rocks.

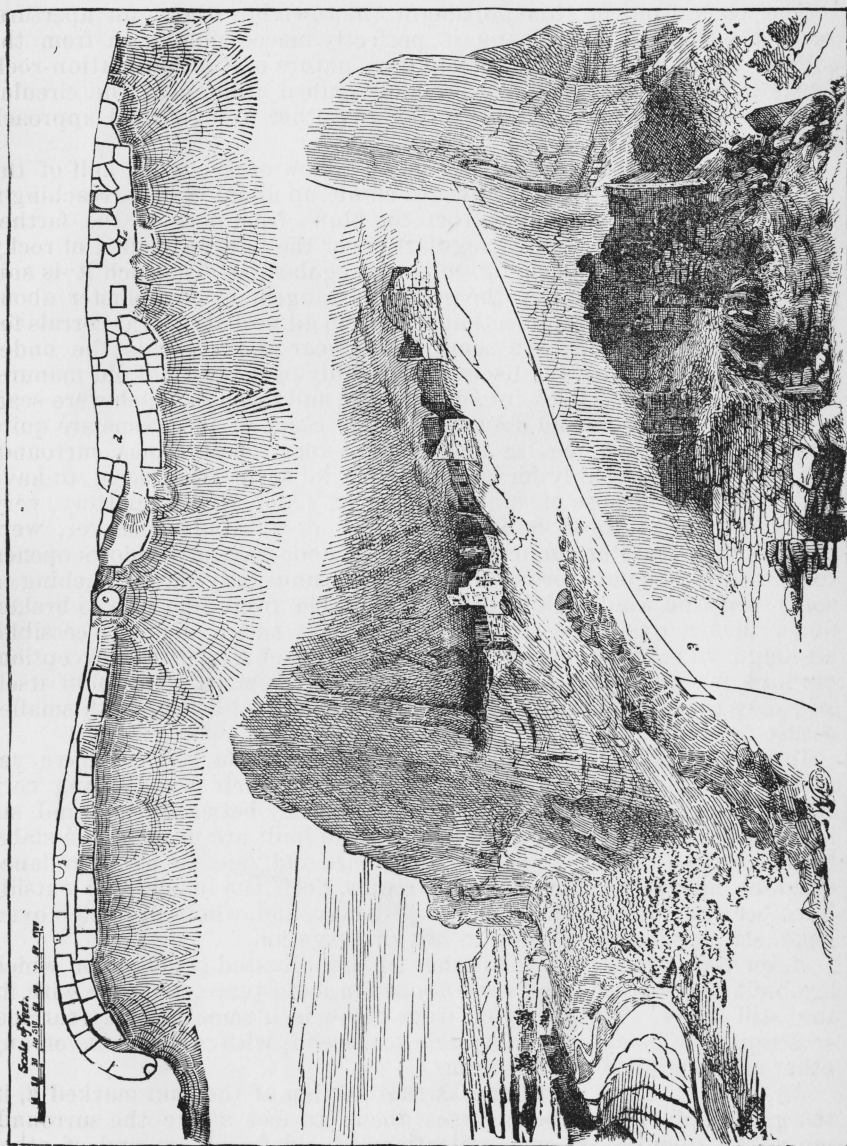
In Fig. 3 of the same plate we have a view of the other half of the town. From the *estufa* we have to climb up about 8 feet, reaching a narrow ledge that starts out from the bluff; from here to the farther end the buildings are built irregularly over the uneven surface of rocky *débris*, each house conforming to the irregularities by which it is surrounded, but all presenting the general arrangement of a cluster about a central court, as at *d* and *e*, that served, in all probability, as corrals for their domestic animals. In some places near these corrals the under surface has broken away, disclosing a solidly-packed bed of old manure, very nearly resolved back into dust again, and through which were scattered twigs of willow and sticks of cedar. Some of the rooms are quite large, from 15 to 25 feet in length; the very small rooms surrounding them were probably for storage, and in some cases seem to have answered the purpose of fire-places, as at *f*, for baking pottery, very likely. None of these buildings, as far as we could discover, were of more than one story in height. All the door-ways or windows opened from within the courts or corrals, and were unusually large, reaching in some cases the whole height of the wall. The front line was so broken down that it was impossible to tell to what extent it was accessible, although we may reasonably infer that it was not so, with the exception, perhaps, of a way for themselves and their animals. The bluff itself was easy to ascend, being composed of large rocks filled up with smaller *débris*.

In their construction these buildings differ from any we have yet met, in the thickness, or rather thinness, of their walls, being very seldom more than a foot, and more frequently between that and six inches thick. The stones of which they are built are in long thin slabs, trimmed down roughly to the required size and laid in an abundance of adobe mortar. In most of the rooms, both the inside and outside have been smoothly plastered over with clay, and, where protected overhead, still retain that coating in fair preservation.

A few rods to the right is another smaller recessed bench, upon which are built two small houses, each about ten feet square, and one with its roof still entire. The approach from below is a smooth, rocky surface, so steep as to be almost impossible to ascend, with no remains of any other easier method of getting up.

At the foot of the bluff beneath that portion of the ruin marked *d*, in the ground-plan, a low bench rises about ten feet above the surrounding valley, upon which are indications of old buildings and of other remains—our so-called burial-places. Chipped flint-work was plentiful, as we found a number of very beautiful specimens of arrow-points, perforators, knives, and some domestic utensils. In a mass of *débris* at the foot of the two-story tower, seven large earthen pots of rough indented ware were found imbedded in the soil and filled with earth. They were too fragile to admit of transportation upon pack-animals, so





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we put them carefully by for future investigators. In the rubbish at the extreme right, a handsome little jug or vase (see Fig. 5, Plate 21) was found, lacking only its handle. A careful search through the very thick deposits of *débris* would undoubtedly reveal many treasures, and we felt many regrets that we could not consistently devote a number of days to the pleasant undertaking. We can only expect to skim the surface, leaving to others hereafter the more satisfactory duty of exhausting each subject in detail.

In progressing southward we find it again necessary to climb the steep bluffs bordering the Chelly, here so tortuous and walled up as to be impracticable, if not impassable. Once on top, however, we made our way with comparative ease over great dunes of a very fine, yellowish-white sand, packed so solidly as to inconvenience the animals but very little; but much the greater part of the way is over a solid floor of bare, nearly white, sandstone, rising into occasional dome-shaped hillocks, and furrowed by shallow ravines. Sage-brush, juniper, and piñon trees were scattered plentifully over the whole region, affording the only relief to an otherwise perfectly barren desert. Traveling thus over this trackless waste, we reach in about fifteen or twenty miles the bare red plains of the famous so-called diamond-fields of Arizona. Beautiful garnets were found scattered plentifully over the whole region, but they could not tempt us to linger, for the sun beat down upon its arid surface with such an intensity that but for the extreme dryness and salubrity of the atmosphere it would have prostrated anything but a salamander.

After crossing this plain we came suddenly upon a side cañon running across our course, seemingly a mere gash in the rocky plateau, down into which we were fortunate enough to find a practicable way for ourselves and animals. But what a contrast! A smooth sward of grass, and thick patches of the tall reedy kind peculiar to damp localities, made a change grateful to both man and beast. Continuing down this cañon—which has, in consequence of its inviting appearance, been called the Cañon Bonito Chiquito—a couple of miles brings us to the wash of the Chelly again, bordered with groves of fine old cottonwoods, but its bed, in which were pools of clear water, was so deep as to be almost inaccessible. A band of wandering Navajos just before us, with large flocks of sheep, had made a way down, however, that we found practicable.

An after investigation revealed the presence of water in large artificial reservoirs, or tanks, in the cañon Bonito, just above where we entered it first, about which are grouped a number of old ruins. This has been a favorite Indian wintering-ground, so that the ruins here have been much modified by their occupation.

Two miles down the cañon of the Chelly we found the house shown in Fig. 1, Plate 15. Its situation is very similar to that of the town shown in Plate 19, but is overhung by a much less height of the impending bluff. It was reached from the valley by a series of steps cut into the rock, but now so weathered away as to be impracticable. It is accessible now by way of the ledge running to the left from the house, some 10 or 12 rods in length, but affording a very narrow and precarious footing. At the time of occupancy this was walled across, with possibly a way for getting over or around, for this ledge communicated directly with the plateau above, where there are remains of what was possibly a corral.

The house consists of two stories, 20 feet in height, built against the sloping back wall of the bluff; the lower story is 18 by 10 feet square, divided into two rooms, one slightly smaller than the other, with a com-

municating door between, and a large door opening outward from the larger one. The upper floor appears to have been all in one room, with one large window facing outward, and much smaller ones in the side walls. Extensions existed upon either side, and also some kind of structure in front, probably a sort of platform-house, covering the lower doorway. To the right the ledge grows narrower, and gradually merges into the perpendicular bluff; 40 feet from the house, on this ledge, are the remains of a wall across it. About 20 rods above, at the foot of the bluff, there is a deep natural reservoir of water, formed by the accumulated rains upon the plateau above pouring over the rocks and scooping out a basin 30 feet in diameter and fully as deep, that seems to retain a perpetual supply of water.

Near our camp, just at the junction of the two cañons, and on the flat surface of the sage-covered valley, were a row of small squares marked out by large stones set upright, such as have been already described. In this case they were of such careful construction and size as to encourage us to dig into them to a considerable depth. Beyond the scattered bits of charcoal, very sparingly deposited in this instance, however, nothing was found.

Five miles above the cañon Bonito, the Chelly expands into a wide valley that extends, with slight interruptions, to the foot of the cañon De Chelly, at the northern end of the Tunicha Mountains. It is bordered by low but abrupt sandstone bluffs, which have been broken into isolated monuments in some places, and stand like huge sentinels upon either hand, as if to warn the traveler from the desolation surrounding him. Although the bluffs contain numerous great circular caves, favorite building-places of the ancient builders, yet we find only two or three ruins of that kind, and only in the lower end of the valley, the last we noticed being about eight miles above the cañon Bonito. This was the largest and most important one in this vicinity, occupying a large circular cave very similar to the one of the San Juan, divided into twelve or fifteen rooms, with a large corral or court, and an elevated bench to one side, with a low wall running around its front edge. This had been occupied by the Navajos for corraling their sheep.

Over the broad, flat valley, sage-covered, sandy, and monotonous, and through which the wide shallow wash meandered from side to side, we found frequent indications of its former occupancy by the old people whom we have been following up, extending southward until lost in the cultivated region about the head of the valley. There were no more remains of stone-built houses, nor the slightest sign of one; all were probably of adobe, the only clew in many cases being simply a slight mound with considerable quantities of broken pottery surrounding it. Eight miles up the cañon De Chelly are the ruins of a cave-town very much like the one described (Plate II), but much smaller, and with a ruined mass of houses at the foot of the bluffs below the cave like bench.\* About the head of the valley the Navajo Indians have several hundred acres, in the aggregate, of corn, pumpkins, and melons under cultivation, taking advantage of the water which comes down thus far from the mountains to the east. From here our trail to the Moqui settlements branched off in a southwesterly direction to a low divide under the southern end of the Mésa Vaca, where it turned nearly south and hardly deviated from a bee-line for a distance of nearly 40 miles to Tegua, the nearest of the Moquis towns.

We will not now stop to discuss the question as to what connection may have existed between the ancient builders of the San Juan and the

\*Simpson's Report.

present semi-civilized people known as the Moquis, but return to the mouth of Epsom Creek and describe the many curious remains found north of the San Juan, all of which bear some relationship to those of the Hovenweep already noticed.

Fifteen miles up Epsom Creek a side cañon comes in from the left, down which trickles a scanty stream of brackish water with the peculiarity of taste and action which has given the name to the whole valley. Camping here, we extended our observations up this lateral cañon some 8 or 10 miles in quest of ruins, and found them numerous enough to satisfy our most earnest desire, although not of the importance of the greater ones of the San Juan and De Chelly. All were of the small cave kind, mostly mere "cubby-holes," but so smoke-blackened inside and showing other marks of use as to convince us they had been long occupied but not during any comparatively recent period. In the generality of cases they were on small benches or in shallow caves situated near the bed of the stream, but the farther up we went the higher they were built. In one instance a bluff several hundred feet in height contains half a dozen small houses sandwiched in its various strata, the highest being up 150 feet, each of but one room, and one of them a perfect specimen of adobe-plastered masonry, hardly a crack appearing upon its smoothly-stuccoed surface. A short distance up from the entrance to the cañon a square tower (Fig. 2, Plate 18) has been built upon a commanding point of the *mésa*, and in a position, so far as any means at our command are concerned, perfectly inaccessible. The stones of which it is composed are of a very nearly uniform size, more so than in any of the buildings we have seen west of the Hovenweep.

Upon the opposite side of the main Epsom Creek Valley, and on top of the high bluffs of sandstone which border it for nearly its whole length, we found some cave-houses in a most singularly out-of-the-way place—in the very last place in the world where one would expect to find them. Scaling the bluff at the very imminent risk of our necks, we came suddenly upon a broad open cave, near the top, containing the usual style of stone-built and mud-plastered houses, divided into four or five apartments, of just the size and number that would be required by an ordinary family of eight or ten persons. Farther up, on top of the bluff, we found the remains of a circular tower 40 feet in diameter, and very old, the stones all crumbled, rounded, and moss covered. Near by were remains of two other cave-habitations.

A few miles farther up the Epsom Valley, passing a number of old ruins hardly worthy of mention, we came upon an important group that was evidently the center of the surrounding population—a place of worship or of general congregation—an aboriginal shire-town.

It lay upon both sides of a small, dry ravine, some 20 or 30 rods back from the bed of the creek, and consisted of a main rectangular mass, 60 by 100 feet square, occupying quite an elevation, dominating all the others. Just below it, and close upon the edge of the ravine, was a round tower 25 feet in diameter; and 75 feet below that, and also close to the ravine, was a square building, 20 feet across, nearly obscured by a thicket of piñon-trees growing about it. On the opposite bank were two small round towers, each 15 feet in diameter, with two oblong structures between, 12 by 15 feet square; at right angles to these four, which were arranged in a straight line, another square building occurred, the same size as the one just opposite on the other bank. Portions of the walls of the towers remained, and a few courses of stone in the walls of the smaller square buildings, but in the large ruin the walls were merely indicated by great mounds of crumbling rock, with the subdivisions distinctly marked, however, into four rectangular apartments. A short



distance above, plenty of water was found in the bed of the creek; fine large cottonwoods bordered the stream, and the broad fertile valley seemed a far more desirable place of residence than the forbidding desolation of the Chelly.

About thirty miles from the San Juan we left Epsom Creek, and stopped for a night at the head of the cañons which run between it and the Montezuma. We were in the midst of quite a thickly-settled, ancient population, the ruins of their habitations consisting almost entirely of the kind just described—low, rectangular mounds, so completely destroyed as not to leave one stone upon another, yet accompanied always by an abundance of the same kind of pottery we have found so universally distributed over other localities. Not the slightest difference can be detected in its general quality, nor can any one style of manufacture or ornamentation be said to be peculiar to any one district or group of ancient habitations. It is the same with arrow-points and like work, and with the similarities in building; although covering two different periods of their existence, it carries the conviction to us that they were all one and the same people, scattered in families and communities throughout the valleys and cañons.

After leaving this last group of ruins, all traces of them suddenly ceased, and in the four or five days spent in the examination of the country upon the southern, eastern, and northern flank of the Sierra Abajo, not a single vestige was found; and this in, without exception, the most pleasant spot we have touched since leaving La Plata. Clear and cold mountain-streams ripple down through ravines overhung by groves of willow, maple, and quaking-asp, with splendid oaks, and stately pines scattered over the uplands, and an abundance of rich, nutritious grass everywhere, that our poor, half-starved animals knew well how to appreciate. The black-tail deer and grouse were in goodly numbers, starting up from under our very noses, and leading our hunters many a long chase.

Leaving half of our little party of six, and all the animals but those we rode and the trusty Mex. with the apparatus, we made our way down through the deep and narrow cañons that lead from the plateau country into the great basin that lies between the Sierra Abajo and the Sierra La Sal, and spent two days in the examination of its arid surface, covered with monumental rocks and ridges, but without coming across so much as a piece of pottery or an arrow-point.

Turning our backs upon the Abajo Peaks, we struck out northeasterly over the plateau, but soon finding a trail bearing southeast, followed it until we saw that it was likely to continue some time upon the plateau, when we branched off to the left, and in a short distance came upon the very brink of the deep cañon of the Montezuma, one of the far-reaching arms of the main wash and valley farther east. Winding our way among rocks and scrubby piñons, we almost literally tumbled down the precipitous descent of 1,500 feet, to a narrow bottom, walled in first by a broad belt of massive white sandstone, rising almost perpendicularly from 20' to 50 feet above the valley; above that the dark red and shaly sand-rocks rose up in receding benches 1,000 feet to a broad tablet of white sandstone on top, so high up that it seemed to shut out all the world and to leave us as engulfed in the bosom of the earth. A narrow but deep "wash" meandered from side to side, containing just a few scattered pools of stagnant water, while dense thickets of oak brush, thickly interwoven with vines, rendered progress anything but pleasant.

We had gone but a few rods before we commenced picking up pieces of pottery and meeting other evidences of occupation; within three



miles a cave-shelter appeared, and then as the valley widened it was dotted in many places with mounds thickly strewn over with the ever-accompanying ceramic handiwork of the ancient people in whose footsteps we are following, and occurring so frequently and of such extent as to excite astonishment at the numbers this narrow valley supported. The line is so sharply drawn that in an hour's ride all traces of any ruins are lost; and there is not so much as a piece of pottery to show that these people had ever extended their residence beyond the limits of their cañon.

Soon other cave-dwellings appear, most of them little walled-up circular orifices in the rock, generally inaccessible, but many were approached by steps, or rather small holes cut in in such a manner as to enable the climber to ascend the rock as by a ladder. Examples of these kinds of ruins are shown in Figs. 1 and 4 of Plate 17, each about 40 feet above the valley, the first perfectly inaccessible and without the least sign of the original method of reaching it; in the other one the walls once closing it have been pushed down so that only traces of them remain; the steps leading up, however, show it to have been considerably used; they are now so worn down by the disintegrating influences of time as to no longer answer their purpose.

Throughout this cañon we find frequent examples of the footsteps cut in the rock, in the generality of cases being simply a way of scaling the smooth, nearly perpendicular wall of sandstone, which hems in the cañon on both sides for twelve or fifteen miles; probably a ready mode of escape up the bluff should enemies appear.

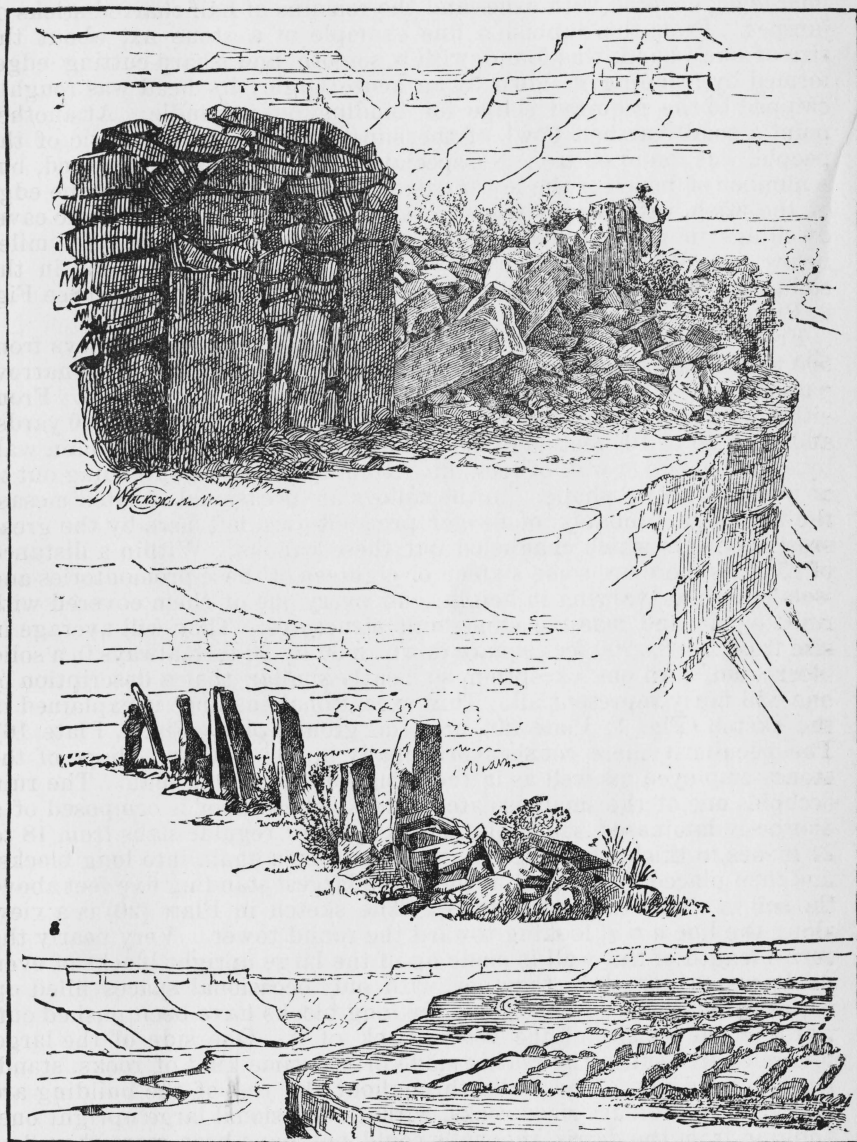
The cliff and cave dwellings, very small habitations, seldom larger than the one in Fig. 2, Plate 15, appear to occur in groups, not always in connection with the old valley ruins, but rather to alternate in succession as we progress down the cañon.

In one of the cave-dwellings, Fig. 3, Plate 17, perfectly black with long-continued smokes inside, and bearing other marks of long use, we found the complete skeleton of a human being; the remains, as afterward determined, of a young man somewhat under a medium size. The excrement of small animals, dust, and other rubbish filled the floor of the little house a foot deep, nearly burying the scattered bones; with them are the shreds of a woolen blanket, woven in long stripes of black and white, just such as the Navajos and Moquis make at the present time. It is likely that the remains are those of a Navajo, a people who occupied all this country up to within a short time, within the remembrance of the older persons, and who were driven beyond the San Juan by the onslaughts of the aggressive Utes.

After traveling about 20 miles from our starting-point at the foot of the mountains, half of the way in the cañon, we camped at the intersection of a large cañon coming in from the west, traversed by a large, well-traveled Indian trail, that continued on down, probably the same one we had crossed earlier in the day. At this point the bottoms widened out to 200 to 300 yards in width, and are literally covered with ruins, evidently those of an extensive settlement or community, although at the present time water was so scarce—not being able to find a drop within a radius of six miles—that we were compelled to make a dry camp. The ruins consist entirely of great solid mounds of rocky *débris*, piled up in rectangular masses, covered with earth and a brush-growth, bearing every indication of extreme age; just how old is about as impossible to tell as to say how old the rocks of this cañon are. This group is a mile in length, in the middle of the valley-space, and upon both sides of the wash. Each separate building would cover

a space, generally, of 100 feet square; they are seldom subdivided into more than two or four apartments. Relics were abundant, broken pottery and arrow-points being especially plenty, and of excellent quality; at one place, where the wash had partially undermined the foundations of one of the large buildings, it exposed a well of regularly-laid masonry extending down six feet beneath the superincumbent *débris* to the old floor-level, covered with ashes and the remains of half-charred sticks of juniper. From this rubbish a fine example of a stone ax, about the size of one's hand, was found, with a smooth and sharp-cutting edge, formed by grinding it down to an acute angle; its head was roughly chipped to the required shape for binding on a handle. At another point a small earthen bowl, of the superior ware characteristic of the people, was found entire. No special burial-places were observed, but a number of bones of the lower extremities were unearthed at the edge of the wash, without any stone-work above them. There were no cave-dwellings in the neighborhood of this group, but two or three miles below several occurred, one of which is built in a huge niche in the solid wall of the cañon, with its floor level with the valley. (See Fig. 2, Plate 17.)

From the last camp the cañon expanded into occasional valleys from 500 to 800 yards across, and then contracting again to a mere narrow passage, but still all shut in by the high escarpment of the mesa. From either side long narrow tongues or promontories extended out 100 yards, and from 20 to 100 feet high, sometimes connected with the main wall by a mere comb or wall of rock, its extremity, however, spreading out to an irregularly oval shape. In the valleys are occasional isolated mesas, the remnants, probably, of former promontories, left here by the great erosive powers which channeled out these cañons. Within a distance of 15 miles there are some sixteen or eighteen of these promontories and isolated mesas, varying in height, and every one of them covered with ruins of old and massive stone-built structures. They will average in size from 100 by 200 feet square down to 30 by 50 feet, always in a solid block, and, with one exception, so nearly similar that a description of one will fairly represent all. This exceptional instance is explained in the sketch (Fig. 1, Plate 20), and the ground-plan (Fig. 1, Plate 16). The peculiarity here consists principally in the size and shape of the stones employed, as well as in the design of its ground-plan. The ruin occupies one of the small isolated mesas, whose floor is composed of a distinctly laminated sandstone, breaking into regular slabs from 18 to 24 inches in thickness; these have been broken again into long blocks, and then placed in the wall upright, the largest standing five feet above the soil in which they are planted. The sketch in Plate (20) is a view along the line *a a*, looking toward the round tower. Very nearly the entire length of this wall is made up of the large upright blocks of even thickness, fitting close together, with only occasional spaces filled up with smaller rocks. In one place the long blocks have been pushed outward by the weight of the *débris* back of it. One side of the large square apartment in the rear is made of the same kind of rocks, standing in a solid row. The walls throughout the rest of the building are composed of ordinary-sized rocks, with an occasional large upright one. Judging from the *débris*, the walls could not have been more than 8 or 10 feet in height. The foundation-line was well preserved, enabling us to measure accurately its dimensions. The large square room was depressed in the center, and its three outside walls contained less material than in the rest of the building. No sign of any aperture, either of window or door, could be detected.





The far more numerous class of ruins occupying like mesas and the promontory points consist of a solid mass of small rectangular rooms, arranged without any appearance of order, conforming to the irregularities of the surface upon which they are built, and covering, usually, all of the available space chosen for their site. All are extremely old, tumbled into indefinite ridges 5 or 6 feet high, and as broad, with the stones partially crumbled into sand, and all covered with sage-brush, greasewood, and junipers. They occupied every commanding and available spur of the mesas, usually so placed in the bends as to afford a clear lookout for considerable distances up and down the cañon. They resemble in this respect the sites chosen by the Moquis in building their villages; but we are not able to trace the resemblance further, from the extremely aged and ruinous state in which these remains are found. Between these fortresses and on the level bottom-lands, generally close up to the bluff upon either side, are occasional smaller ruins, resembling those at the dry camp. In connection with these a peculiar feature is shown in Plate 20, Fig. 2. At the foot of one of the promontory towns a low bench, tongue-shaped, and only about 10 feet above the valley, runs out from the mesa 200 feet in length and half as broad, through the center of which runs a wall its entire length; a portion of it is composed of the large upright rocks shown in the sketch, the largest standing seven feet above the surface and evidently extending some distance below, in order to be retained so firmly in their places. There are only seven of these standing, placed about 5 feet apart, the rest of the wall-line being composed of a low ridge of loose rock extending up to a mass of old ruins at the foot of the bluff. One side of the space divided by this wall is filled with a great pile of rocks arranged in irregular lines inclosing areas from 20 to 50 feet in diameter, the whole indicating a very considerable structure.

Grouped among the lower end of these towns were a number of the small cliff-houses; a regular colony of them occurring at the first bend of the West Montezuma, about a dozen miles above its junction with the east fork. An exceedingly well-preserved and peculiar one is shown in Fig. 1 of Plate 18. A block of sandstone setting on the edge of a mesa bench 50 feet above the valley has a deep oval hole worn in it, probably by natural agencies, which is nearly entirely occupied by a very neatly-built little house 10 feet long, 6 high, and 5 deep. A space at one end is reserved just large enough to serve as a platform to enter from.

Below the bend in which these cliff-houses occur, the Montezuma loses its cañon character and spreads out into a wide, barren valley, thickly covered with tall sage-brush, and the wash lined with large cottonwoods. The mesas upon either hand dwindle down considerably in height and abruptness, and seldom contain ruins. The large square buildings on the bottom-lands, however, are important features, and were it not for their great number, and the exceeding indefiniteness of their outlines, we might linger longer and describe each in detail. Over all are found immense quantities of broken pottery, many examples of which are shown in the accompanying plates. Arrow-points and like chipped work were especially numerous, and a great many of small size and great delicacy of finish were found.

It should have been mentioned that running water occurs in the Montezuma at the bend spoken of, and a band of Weminuche Utes, who now occupy these cañons, have considerable corn planted there. It is not impossible that formerly water was constant throughout the whole length of the region occupied by these ruins. Below the junction of the east and west forks of the Montezuma, the valley must have been



always hopelessly barren and dry, for not a vestige of any ruin occurs. At its mouth and along the San Juan, as we have noticed, they appear at once again in considerable numbers.

Our investigations closed with a side trip up into some of the sterile gorges between the two forks of the Montezuma, but without any results worth especial mention. A few small cliff-houses occurred, and a few scattered remains about the open lowlands. Upon the tops of the mesas in this vicinity, as well as upon those between the Montezuma and the Hovenweep, were old remains of towns. A glance at the accompanying map will give some idea of their distribution, although those about the head of the West Montezuma are only located approximately, in the absence of any precise notes of its topography.

#### POTTERY.

On the opposite page, Plate 21, we have grouped a few of the most striking examples of the pottery collected upon the trip, and which forms by far the most interesting of all the relics of the ancient people of the San Juan Valley. All who have ever visited this region, which extends from the Rio Grande to the Colorado, and southward to the Gila, have been impressed with the vast quantities of shattered pottery scattered over the whole land, sometimes where not even a ruin now remains, its more enduring nature enabling it to long outlive all other specimens of their handiwork. It is especially interesting as enabling us to see at a glance the proficiency they had attained in its manufacture and ornamentation, displaying an appreciation of proportion, and a fertility of invention in decoration, that makes us almost doubt their ante-Columbian origin; but nevertheless, without going into the details, we believe them to antedate the Spanish occupancy of this country, and to owe none of their excellence to European influences, being very likely an indigenous product.

Fig. 1 is a jar from the valley of Epsom Creek, of dark gray and rather coarse material, without color or glaze, of the indented and banded ware peculiar to the ancient artificers only. It is made by drawing the clay into ropes, and then, commencing at the bottom, building up by a continuous spiral course, each layer overlapping the one under it, the indentation being produced by a pressure with the end of the thumb, and by a slight doubling up of the cord of clay. The design is varied by running several courses around quite plain. Its diameter was 18 inches, with the same height, and 9 inches across the mouth. For so large a vessel it was very thin, not more than one-fourth of an inch. Inside, the surface was rubbed perfectly smooth.

Figs. 2, 3, 11, are restorations from well-preserved fragments of mugs or cups, each elaborately ornamented in black on a white glazed ground; the last one, especially, is of firm, excellent ware, and the design put on with great precision. The first two are  $3\frac{1}{2}$  inches in diameter and 4 inches high, and the last one  $4\frac{1}{2}$  inches in diameter by 5 inches in height.

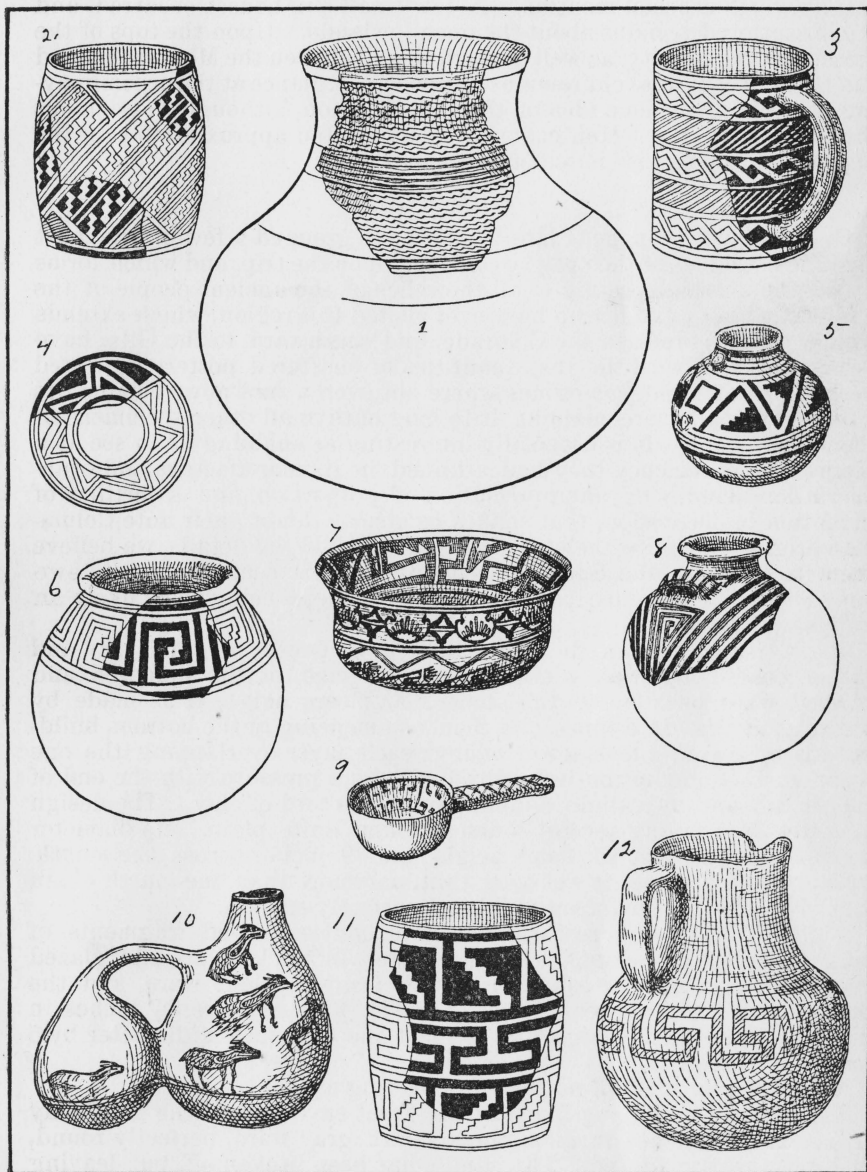
Fig. 4 is a flat disk of pottery for covering a jar.

Fig. 5 is the small jug found at the great cave ruin on the De Chelly (Plate 19),  $3\frac{1}{2}$  inches in diameter, of dark gray ware, perfectly round, and very neatly painted. The handle has been broken off, but leaving the marks where it had been attached.

Fig. 6. A slightly oval-shaped jar, 10 inches in diameter, and a mouth 5 inches wide, with the lip rolling over sufficiently to attach a cord to carry it by.

Fig. 8. A small jug with side-handles and narrow neck,  $4\frac{1}{2}$  inches in diameter and  $1\frac{3}{4}$  inches across mouth.







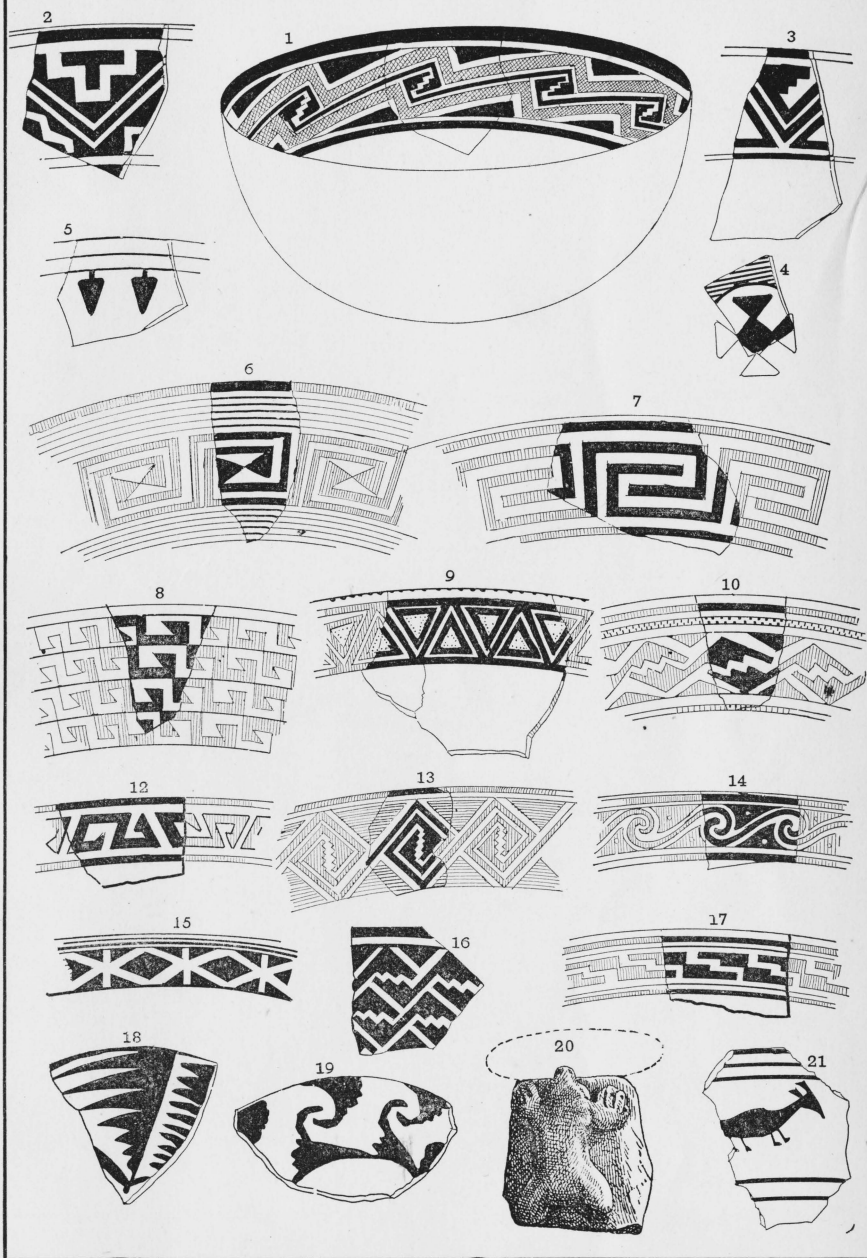




Fig. 9. A cup or dipper from Montezuma Cañon; bowl,  $3\frac{1}{2}$  inches diameter; handle, 4 inches long.

Fig. 12. A pitcher, taken from a grave on the banks of the San Juan, near the mouth of the Mancos, by Captain Moss. In the same find were other similar vessels, some polished stone implements, and a human jaw-bone. The ware of this pitcher is a coarse, gray material, somewhat roughly modeled, but of fine form and tasteful decoration.

Fig. 10 is a peculiar vessel, found among the Moquis of Teguá. They could give no account as to where it came from or who made it. It is probably of Zuñi manufacture. The material is rather soft, being easily cut with a knife. The upper portion is painted or glazed white, and the lower red; the figures are painted in red and black. The tallest portion is six inches in height.

Fig. 7 is an example of the modern work of the Moquis of Teguá. The material and workmanship are far below any of the preceding examples; approaching them only in its ornamentation, which is strictly inventional, but somewhat *bizarre*.

## PLATE 22.

This plate is intended to represent some of the most striking instances of taste and ingenuity in the ceramic decoration of the nameless potters, all the examples selected being, with one exception, from vessels of the general form of Fig. 1. With but very few exceptions the ornamentation is on the inner surface, generally in the form of a band, from 1 inch to 4 or 5 inches in breadth, but in many cases it covers the entire inner surface. If the outside of the dish is painted it is in the form of a simple narrow band, like Fig. 15. These dishes or bowls vary in size from 13 inches in diameter (Fig. 9) to mere cups of only 5 inches (Figs. 18, 19).

The ware is dark gray and nearly white; hard and firm, giving a clear ringing sound when struck. It varies in thickness from  $\frac{3}{16}$  to  $\frac{3}{8}$  of an inch. Many of the specimens have a fine glossy glaze upon which the black design lies without any perceptible wearing away. Figs. 7, 8, 10, and 16 are good examples, all the others but a trifle less so. This is the more noteworthy from the fact that all have been exposed in open places to all the disintegrating influences of soil and climate for probably hundreds of years. Fig. 2 appears to have suffered the most, but the white ground has worn out, leaving the black design in relief. In some, as in Fig. 2, the design is jet black, running through intermediate shades of a reddish black when the color has run thin, down to where the design is quite faint; whether from the washing away of the paint or whether it was originally so, would be hard to tell.

Fig. 4 is a design that occurs frequently in the bottom of the dishes; we found half a dozen of the same general form. Circles with many radiating points, like a delineation of the sun, also occur quite often.

In Fig. 21 we have the only example yet found from among the ancient pottery of any attempt at imitational ornament. As to what the figure is intended to represent would be rather difficult to decide satisfactorily. This fragment came from the upper cañon of the Montezuma, and represents the inner surface of the bowl; it is reduced to about one-third in the plate.

Fig. 20 is evidently a portion of the neck of a jug or like vessel of the rough gray ware, of which Figs. 1 and 12 of Plate 21 are composed. It is another rude attempt in plastic material at the imitation of animal life, and evidently is intended for a frog. This comes also from the Montezuma Cañon.





## THE HUMAN REMAINS FOUND AMONG THE ANCIENT RUINS OF SOUTH-WESTERN COLORADO AND NORTHERN NEW MEXICO.

BY DR. EMIL BESSELS.

The human remains collected by some of the gentlemen of the United States Geological Survey, among the ruins described by Messrs. T. H. Holmes and W. H. Jackson, are of more than common interest, as they are the first ever examined, and furnish material for conclusions in regard to the general features of the former inhabitants of the region in question.

Before giving the description of these remains, it may be advisable to insert a few short notes communicated by Mr. Holmes, bearing upon the conditions under which the bones to be described were found. They are as follows:

"The broken and much decayed skull (No. 3) was found on the Hoven Weep, about ten miles above its junction with the Mac Elmo, by Mr. Chittenden. This locality is in Colorado, about thirty miles north of the New Mexican boundary, and six miles east of the Utah line. The bones of the skeleton were projecting from the side of a deep wash and by their position seemed to indicate that the body had been buried in a squatting posture.\* The skull was about four feet from the surface.

"It should be noted that these stream-courses are very stationary; that this encroachment upon the compact, vitreous soil of the flats is in all probability exceedingly slow, so that a skeleton might rest for hundreds of years quite undisturbed. There is no running water whatever during the greater part of the year. Ruins in a very advanced stage of decay were found in the neighborhood. The whole region has a desert-like aspect, and the modern tribes are not known to frequent it.

"The two more perfect skulls (Nos. 1 and 2) were obtained at an ancient ruin near Abiquiu, N. Mex. The skeletons were found entire, having been partially unearched by a recent wash. They were within 20 or 30 feet from the eastern wall of the ruin, and, judging from the description, within a very few feet from the spot where Dr. Yarrow obtained his specimens.† Fragments of pottery were found with the skeletons. The earth above them was very compact. They were three feet from the surface.

"A great number of burial-places were noticed, but of the graves examined, few yielded further evidences of occupation than small quantities of charcoal and bits of painted pottery. These burial-places are usually found on the summits of high ridges and promontories, and are still marked by slabs of sandstone set on edge, and arranged in circles and parallelograms of greatly varying dimensions; but that they did not always bury their dead in high places is proven by the frequent discovery of human remains in the arroyos or deep washes in the valleys. The skeletons were obtained in the vicinity of ruined villages, from the sides of recent washes."

Before treating in detail of the skulls, we shall notice the other parts of the skeleton.

\* We do not doubt that the position in which the bones were found, indicated a squatting posture of the skeleton, but it is not probable that this posture was commonly in use in burying the dead.—AUTHOR.

† Report of Chief of Engineers for 1875, p. 1066.

## LONG BONES.

There are eight long bones among the remains, viz:

- |                   |   |    |
|-------------------|---|----|
| 1 humerus, right. | } | A. |
| 1 ulna, right.    |   |    |
| 1 radius, left.   |   |    |
| 1 femur, left.    |   |    |
| 1 tibia, left.    |   |    |
| 1 fibula, left.   |   |    |

evidently belonging with the skull marked No 1.

Besides these are,

- |                 |   |    |
|-----------------|---|----|
| 1 femur, right. | } | B. |
| 1 femur left.   |   |    |

which should undoubtedly be correlative with skull No. 2.

*Description and measurements of bones A.*

*a. Humerus.*—If we may judge from what is known in general about the proportions of the human body, the long bones combined under the head A belonged to a person about 5.6 feet high. The greatest length of the humerus, measured from the apex of the head to the inner and lower border of the trochlea  $32^{\text{cm.}}.2$ ; greatest diameter of head near the anatomical neck  $4^{\text{cm.}}.8$ . Muscular insertions very marked. Antero-posterior diameter of shaft  $7^{\text{cm.}}.5$  below insertion of supra spinatus  $2^{\text{cm.}}.2$ . Transverse diameter  $2^{\text{cm.}}.4$ ; circumference  $7^{\text{cm.}}.3$ . The same measurements in the middle of the bone  $1^{\text{cm.}}.7$ ,  $2^{\text{cm.}}.3$ , and  $6^{\text{cm.}}.6$ , respectively, and  $1^{\text{cm.}}.5$  above the olecranon depression  $1^{\text{cm.}}.8$ ,  $3^{\text{cm.}}.6$ , and  $9^{\text{cm.}}.8$ . Extreme distance between outermost point of external and innermost of internal condyle  $6^{\text{cm.}}.1$ .

*b. Ulna.*—Distance from olecranon to articular part of the head of the lower extremity (styloid process broken)  $=26^{\text{cm.}}.3$ ; muscular insertions everywhere strongly pronounced. Greatest circumference of shaft measured  $3^{\text{cm.}}.7$  below the highest point of coronoid process,  $5^{\text{cm.}}.3$ ; antero-posterior and lateral diameters, in the same plane  $1^{\text{cm.}}.8$  and  $1^{\text{cm.}}.6$ , respectively.

*c. Radius.*—Distance from highest point of head to lowermost of styloid process  $24^{\text{cm.}}.6$ ; diameter of head  $2^{\text{cm.}}.2$ ; depression of its upper surface rather deep; ridge for attachment of portion of supinator brevis uncommonly pronounced. The shaft does not offer anything extraordinary. Antero-posterior and transverse diameters of lower extremity  $2^{\text{cm.}}.3^{\text{cm}}$  and  $3.4$ , respectively.

*d. Femur.*—The length of the femur, measured from the upper surface of the head to the inner condyle, is  $45^{\text{cm.}}.5$ , while the greatest distance between the great trochanter and the outer condyle is  $43^{\text{cm.}}.4$ . Greatest width measured between the depression for the ligamentum teres and the insertion of the gluteus medius  $9^{\text{cm.}}.9$ ; greatest diameter of head  $4^{\text{cm.}}.6$ ; depression for the attachment of the ligamentum teres is less ovoid than usual, and more of a reniform shape, its two diameters being  $2^{\text{cm.}}.0$  and  $1^{\text{cm.}}.5$ , respectively. Neck very strong; greatest horizontal diameter  $2^{\text{cm.}}.6$ ; greatest vertical diameter  $3^{\text{cm.}}.2$ ; anterior surface without any vascular foramina and concave, while the posterior surface is more convex than usual. Antero-posterior diameter of shaft  $1^{\text{cm.}}.5$  below the base of the lesser trochanter  $2^{\text{cm.}}.5$ ; transverse diameter measured in the same plane  $3^{\text{cm.}}.4$ . The same measurements taken in the middle of shaft  $2^{\text{cm.}}.4$  and  $2^{\text{cm.}}.3$ , and  $3^{\text{cm.}}.4$ , above the upper and external border of the trochlear surface  $3^{\text{cm.}}.0$  and  $4^{\text{cm.}}.2$ , respectively. The three cir-

cumferences measured successively in the same planes 9<sup>cm</sup>.5, 7<sup>cm</sup>.9, and 11<sup>cm</sup>.9. In proportion to the massiveness of the bone the linea aspera not very prominent; arch for the femoral vessels not indicated. Distance from outer to inner tuberosity of lower extremity 8<sup>cm</sup>.2.

*e. Tibia and fibula.*—The length of the tibia, belonging with the femur above mentioned, is 38<sup>cm</sup>.1, as measured from the highest point of the spine of the head to the most distant point of the internal malleolus. Greatest antero-posterior and transverse diameters of head 5<sup>cm</sup>.0 and 7<sup>cm</sup>.9, respectively. Shaft rather platycnemic; antero-posterior diameter 6<sup>cm</sup> below the attachment of the ligamentum patellæ 3<sup>cm</sup>.7; transverse diameter at the same place, 2<sup>cm</sup>.5; circumference 9<sup>cm</sup>.8. The same measurements taken in the middle of shaft 3<sup>cm</sup>.3, 2<sup>cm</sup>.1, and 8<sup>cm</sup>.5; and repeated, 7<sup>cm</sup> above the lowermost point of the internal malleolus=2<sup>cm</sup>.7, 2<sup>cm</sup>.8, and 2<sup>cm</sup>.8. The length of the fibula, from the styloid process to the external malleolus, 37<sup>cm</sup>.9; the latter projecting 2<sup>cm</sup>.7 below the inferior surface of the tibia at place of articulation. Antero-posterior diameter of shaft measured in the middle 1<sup>cm</sup>.7; transverse diameter 1<sup>cm</sup>.0, and circumference 4<sup>cm</sup>.8. If the femur and tibia be placed in natural connection the former appears to be much curved, as if it had been attached to a broad, woman-like pelvis; the skull belonging with the bones in question rather exhibits male characteristics than female.

For the sake of comparison, we shall add the following table, containing some measurements of long bones from Kentucky mounds taken by the late Jeffries Wyman.\*

*Indians from Kentucky mounds.*

	H.	U.	R.	F.	T.	
	28	21	18	34	28	Humerus = 1.000
						Ulna = 0.816
Maximum.....	337	284	270	479	397	Radius = 0.758
Minimum.....	283	214	215	383	317	Femur = 1.000
Mean.....	310	253	235	438	363	Tibia = 0.829

*Description and measurements of bones B.*

The bones designated by B are two femora belonging together, consequently it will be sufficient to consider only one of them, and we shall choose the right one for this purpose. Length from upper surface of head to lowermost point of inner condyle 35<sup>cm</sup>.6. Distance between uppermost point of great trochanter and lowermost of outer condyle 33<sup>cm</sup>.1. Distance from outermost point of the head to outermost point of trochanter major 7<sup>cm</sup>.2. Greatest horizontal diameter of the neck 1<sup>cm</sup>.8; greatest vertical diameter 2<sup>cm</sup>.5; diagonal line of the outer surface of the great trochanter not prominent; triangular surface for the attachment of the tendon of the gluteus medius smooth. Antero-posterior diameter of shaft 2<sup>cm</sup>.3; below the summit of lesser trochanter 1<sup>cm</sup>.8; transverse diameter 2<sup>cm</sup>.4. Same measurement in the middle of bone 2<sup>cm</sup>.0 by 2<sup>cm</sup>.2, and 2<sup>cm</sup>.9 above the upper and external border of trochlear surface 2<sup>cm</sup>.1 by 3<sup>cm</sup>.0. The three circumferences measured successively in the same planes, 6<sup>cm</sup>.7, 6<sup>cm</sup>.2, and 9<sup>cm</sup>.1. Arch for the reception of the femoral vessels very deep.

\* Fourth annual report of the trustees of the Peabody Museum of American Archaeology and Ethnology. Boston, 1871, p. 19.

## DESCRIPTION OF SKULLS.

The three skulls forming the more interesting part of the remains are designated by Nos. 1, 2, and 3, respectively.

*Skull No. 1.—Plates 23, 24, and 25, (Fig. 5.)*

This is almost perfect, with the exception of the right styloid process, which is missing, and the two condyles articulating with the atlas, which, according to all appearance, were broken off quite recently.

Viewed from above, the outline of the massive skull is somewhat heart-shaped, and but little irregular, the irregularity being chiefly due to the depression of the posterior portion of the left parietal bone. This depression extends also, but less marked, a short distance over the right parietal, inclosing a somewhat triangular space, and likewise over the occipital, down to the protuberance. Serration of sagittal suture coarse. A small Wormian bone in the coronal near the left temporal ridge. Parietal tubers very pronounced.

In profile the considerable height of the skull is very striking, as is also the depression, if the left side be turned toward the observer. Occiput, from a plane laid horizontally through the tubera parietalia downward, straight, almost perpendicular, the central portion of the occipital only bulging out slightly. Temporal ridges pronounced; mastoid process heavy; meatus rather elongated. Upper portion of frontal, from the region of the tubera, receding; supra-orbital arches moderately convex. Naso-frontal angle considerable, indicating aquiline features; anterior nasal spine prominent. There is a slight tendency to prognathism.

A frontal view shows a moderately-broad forehead; distance between the orbits rather considerable; left supra-orbital foramen exceedingly small; the right supra-orbital arch shows 3 foramina. Malars massive; incisive fossæ deep; canine eminences considerable. Muscular insertions of the lower jaw invariably very pronounced, but the exterior oblique line comparatively weakly developed. Height of ramus 7<sup>cm</sup>.1. Teeth normal, their crowns slightly worn down, especially those of the incisors, but in excellent state of preservation.

In a base view the deformation shows almost as much as in profile. The left mastoid process, being more obtuse than the right one, is pushed forward, and, in connection with this the foramen magnum is somewhat asymmetrical and distorted. Left posterior condyloid foramen wanting; the spot where it ought to be is, however, very thin; and, as, in similar cases, the size of the existing foramen is greater than usual. The effect of distortion may be noticed along the entire left portion of the base, on which side the eruption of the last molar never took place, although the right one cut through.

Viewed from behind, the outline of the skull is hexagonal. Parietals sloping considerably from the sagittal suture to the tubera, from which they form an almost perpendicular line to the mastoid portions of the squamosals. Lower outline of occipital but slightly convex. The internal occipital protuberance is but faintly indicated, especially if compared with other muscular insertions, but the ridge is strongly marked. While the right depression for the insertion of the rectus capitis posticus is deep and well developed, the opposite is but shallow.

Before giving the conventional measurements it may be well to state that the indices of height and breadth were intentionally omitted, as, on account of the deformation of the skull, they would be of little value.

*Measurements.*

	<i>c. cm.</i>
Capacity.....	1325
	<i>mm.</i>
Length.....	168
Breadth.....	144
Breadth of frontal.....	119
Height.....	135
Frontal arch.....	319
Parietal arch.....	346
Occipital arch.....	234
Longitudinal arch.....	359
Circumference.....	508
Length of frontal.....	123
Length of parietal.....	134
Length of occipital.....	160
Zygomatic diameter.....	144

*Skull No. 2.—Plates 25 (Fig. 2), 26, and 27.*

According to its features, the skull designated by No. 2 is that of a woman, and is, with the exception of the zygomatic bones, which are broken, well preserved. If, among the Indians, the eruption of the last molars takes place at the same time as in our race, the skull in question cannot have belonged to a person much younger or older than seventeen.\* In general, the skull is delicately built, being rather small, showing smooth surfaces and weak muscular insertions.

Viewed from above, it presents outlines similar to the skull previously described, but while the latter is deformed on its left side, the one in question is compressed on its right and is asymmetrical in a far higher degree.

In a profile view we notice above all, highly developed prognathism, a rather low forehead, and the outline of the occiput to be nearly straight. This latter fact is brought to view more strikingly if we look upon the right side of the skull, where we can lay almost a straight line from near the tuber over the surface of the parietal to the mastoid process, touching within a few millimeters the lambdoidal suture. If we measure the distance from the glabella to the left superior curved line of the occiput, it will be 1<sup>cm</sup>.3 greater than if measured between the same points on the opposite side, thus showing clearly the asymmetry of the skull.

A view from behind exhibits this less than one from the base, the latter revealing a distortion extending from the right side of the occipital to the narrow and elongated palate process of the maxilla, which is pressed forward. As in almost every instance of prognathism, the foramen magnum is thrown backward. This is, however, not only due to the protruding position of the upper maxilla, but also to a great extent to the flattening of the occiput, causing the occipital bone to turn upward almost abruptly within about half a centimeter from the posterior margin of the foramen magnum, that is on the right side of the skull, there being a little more space on the left. Both posterior condyloid foramina are well developed, the right one being larger than the left. The muscular insertions on the left side of the occipital are more strongly marked than those of the right, especially the places of insertion of the complexus and the rectus capitis. The protuberance is

\* As puberty takes place sooner among Indians than among white men in general, we may conclude that the eruption of the last molars occurs earlier with the former races than with the latter.



scarcely indicated. The lambdoidal suture shows two Wormian bones where it joins the sagittal, one being situated to the right, the other to the left of the latter, measuring 2<sup>cm</sup>.2 and 3<sup>cm</sup>.2, respectively. Another but smaller Wormian bone may be noticed, where the left lambdoidal joins the squamous suture. The mastoid processes are rather obtuse and small, the digastric fossa of the left being longer and deeper than that of the right, while the right mastoid foramen is larger and situated somewhat higher than the one opposite. The parietal eminences are not very distinct, although they may be recognized by viewing the skull from above; the temporal ridges are not indicated at all, and the right parietal foramen is situated before the left one and is about twice as large. Coronal suture rather straight, without many serrations. The frontal bone is without any median ridge or trace of suture, the eminences are but slightly developed, the superciliary ridges scarcely indicated, and the temporal ridges only well marked in the vicinity of the supra-orbital arches. The angle formed by the nasal bones with the frontal, and the curvature of the nasal bones are rather flat, nasal meatus rather round, anterior nasal spine moderately protruding. The number of teeth in the upper jaw complete, the last molars on each side in the act of eruption. Teeth rather small, with the exception of the incisors, which are directed much more obliquely forward than downward; canines smaller than the incisors; only the crowns of second and third molars ground flat; the other teeth of the upper jaw scarcely showing any wear, while the incisors of the lower bear the marks of extensive use; not so, however, the molars, which are almost intact, at least those on the left side. Symphysis of the lower jaw scarcely visible, mental process tolerably developed, and incisive fossa of the right deeper than that of the left. External oblique line only well indicated near the anterior border of the ramus. Coronal process rather pointed; insertion of the internal pterygoid muscle less than usually rough.

### Measurements.

	<i>c. cm.</i>
Capacity.....	1020
	<i>mm.</i>
Length.....	150
Breadth.....	131
Breadth of frontal.....	106
Height.....	130
Frontal arch.....	278
Parietal arch.....	325
Occipital arch.....	226
Longitudinal arch.....	342
Circumference.....	450
Length of frontal.....	118
Length of parietal.....	117
Length of occipital.....	150
Zygomatic diameter*.....	116

### Skull No. 3.—Plates 28 and 29 (Fig. 13).

The skull designated by this number is rather thin, and was broken into a number of small fragments when brought from the field, and the pieces themselves were very fragile. It could, however, be sufficiently well restored to convey a good idea of its general features, which are decidedly masculine and even animal-like.

\* The zygomatic bones being broken, the zygomatic diameter could only be ascertained approximately. Probable error =  $\pm 1^{\text{mm}}.5$ .



Although the occipital bone is almost entirely wanting, it may still readily be seen that the skull had been deformed in a manner analogous to the two others, and as it seems, chiefly on its right side, as a view from above will demonstrate, although the depression of the occipital region does not seem to have been as great as in either of the cases above mentioned. The outline of the cranium is more oval than that of No. 1 and No. 2, and appears somewhat flattened near the median line along the parietals. The superciliary ridges protrude very considerably beyond the general outline of the frontal, and in the same view, from above the zygomatic bones, the nasals and the upper maxillæ may be seen to project. There are no traces left of the sagittal suture; the direction of the latter cannot even be detected if the skull be held against a strong light; but the coronal is plainly visible. As already stated, the occipital bone is almost entirely broken, there being left only a narrow piece of its upper portion, which measures about 9 centimeters in length. The right side of the skull is of a dark brown color, which is frequently noticed on bones exhumed from peat-bogs. An examination proved the coloring matter to be chiefly iron. Like the rest of the surface the right side, besides being colored, is covered by numerous fine cracks and grooves, either produced by running water that dissolved the carbonate of lime of the osseous tissue, or by the roots of plants that assimilated the salts. The side under consideration has the exterior portion of the mastoid process, which is rather massive, preserved. Temporal ridge extremely developed; zygomatic process strong. Frontal bone receding almost as much as in some ancient Peruvian skulls that lie before me, and which are artificially deformed. Superciliary ridges very prominent; nasals strongly curved, aquiline; upper maxilla prognathic in a considerable degree.

In a front view the heavy superciliary ridges appear very marked; supra-orbital arches strong; foramina large; anterior nasal spine projecting; septum oblique, its posterior portion shifted toward the right from the median line. First left incisor partly decayed; crowns of the teeth, especially on that of the molars, ground down. Insertions of muscles of lower jaw strong; those of the left more developed than the right; mental process prominent. Height of ramus from angle to highest point of condyle, 6<sup>cm</sup>.8; sigmoid notch deep; distance between the outermost points of right and left condyles, 12<sup>cm</sup>.2.

#### *Measurements.*

	<i>c.cm.</i>
Capacity .....	
	<i>mm.</i>
Length .....	
Breadth .....	136
Breadth of frontal .....	119
Height .....	
Frontal arch .....	297
Parietal arch .....	338
Occipital arch .....	
Longitudinal arch .....	
Circumference .....	
Length of frontal .....	126
Length of parietal .....	132
Length of occipital .....	
Zygomatic diameter .....	144

Thanks to the kindness of Dr. A. Otis, who, with his usual liberality, placed the osteological collection of the United States Army Medical Museum at my disposal, I could examine the two skulls collected by

Doctor Yarrow in the vicinity of the ruins near Abiquiu, to which I took occasion to refer on one of the preceding pages. One of them, bearing the number 1178 in the catalogue, is that of a child about ten years old. The other, marked 1179, is that of an adult, and exhibits the general characters of a female.

We shall first consider No. 1178, which is distorted about as much as No. 2; but while the latter is deformed on its right side, the former is compressed on its left, and is asymmetrical through its entire extent, including the lower jaw. Viewed from behind it is of almost quinquelateral shape, the two upper sides of the pentagon being formed by the parietals sloping down slightly from the coronal suture to the tubers; the two lateral sides are formed partly by the parietals and the posterior portions of the squamosals, sloping from the parietal tubers to the mastoid processes, which are very small and obtuse, while the base of the polygon is formed by a line running obliquely from the left zygomatic process across the occipital to within two centimeters of the right mastoid; protuberance of occiput scarcely developed; superior and inferior curved lines wanting; muscular insertions weak.

Owing to the deformation of the skull, the two profile views are rather different from each other. The right side of the cranial portion does not present any extraordinary features, except toward the frontal region and the adjoining facial portion. The left frontal tuber projects about one centimeter above the right one, the whole left half of the frontal being pressed forward, in consequence of which the right side seems to recede to a considerable extent; ridge of the nasals slightly curved inward. There is slight tendency to prognathism. The left profile shows the occipital depressions in almost its whole extent, the lower and posterior portion of the parietal being flat, almost concave instead of convex; this is also the case with the left portion of the occipital. The asymmetry of the skull becomes not less striking in a facial view, in which case the frontal bone recedes in an oblique direction from the left tuber to a short distance behind the right one. The lower jaw partakes, in a similar manner, in the distortion, its left half being also pressed forward, but less than the corresponding half of the frontal bone. The lower border curved inward and upward rather deeply near the symphyses, the curve descending lower on the right side than on the left.

Viewed from above, the skull is of an irregular oval form, the left frontal tuber projecting beyond the general outline, and the posterior portion of the parietal of the same side being compressed so that the right parietal tuber appears to be very prominent.

Unfortunately the base is not complete; but, although the lower and anterior portion of the occipital and the basilar process are missing, there is evidence enough of the general distortion. The left mastoid process is about one centimeter beyond the right one, and although to a less extent, we notice both the palate bone and the palate process of the left upper maxilla to be pressed forward.

#### *Measurements.*

	<i>c. m.</i>
Capacity .....	1213
	<i>mm.</i>
Length .....	151
Breadth .....	138
Breadth of frontal .....	110
Height* .....	
Frontal arch .....	271

\* The anterior margin of the foramen magnum being defective, the height could not be ascertained.

Parietal arch .....	mm. 349
Occipital arch .....	195
Longitudinal arch .....	341
Circumference .....	357
Length of frontal .....	115
Length of parietal .....	126
Length of occipital .....	153
Zygomatic diameter .....	100

Skull No. 1179 rather delicate; is deformed in a more regular manner than either of the others above mentioned, and might very well be taken for that of an ancient Peruvian. The frontal does not recede as much as it usually does in Peruvian skulls, owing to their mode of deformation, but in this instance the lower anterior portion of the frontal ascends very straight, almost perpendicular, and more so than in any of the other skulls.

Viewed from above, it is broadly heart-shaped, having its greatest breadth about one centimeter above the insertion of the retrahens aurem in a plane projected perpendicular through the posterior portions of the zygomatic processes. The nasal bones and the alveolar processes of the upper jaw protrude to a considerable extent beyond the general outline of the cranium, while the malars and zygomatic processes stand out but slightly, the former, however, more than the latter. In profile the occipital portion of the skull appears perpendicular within a few degrees; only the left portion of the occipital bone protrudes a little near the superior curved line, which on this side is more developed than on the other. Left zygomatic process slender; the right one defective, partly broken. Nasal bones very projecting, indicating a Roman nose.

Facial portion comparatively small; forehead narrow; frontal tubers well developed; superciliary ridges but slightly indicated. Malars slender; anterior nasal spine prominent; maxillæ very nearly orthognathic. Teeth very irregular; left incisors of upper jaw missing; the first right one very large, while the second is unnaturally small. Canines standing very oblique, their crowns inclined to a considerable extent toward the symphysis. Second right bicuspid temporary; permanent one in the act of eruption, last molars not yet cut, their position somewhat abnormal. The teeth of the lower jaw are more regular. Both false molars of the left side and second on the right missing, last molar not yet erupted. Mental process well developed; exterior oblique line slightly indicated; sigmoid notch flat; ridges for the insertion of the masseter slight; anterior border of ramus almost straight.

The base of the skull is nearly triangular, and only slightly asymmetrical. Posterior outline of occipital almost straight, and approaching within half a centimeter toward the posterior margin of the foramen magnum. Muscular insertions highly developed; occipital protuberance very much elongated. Condyles long and narrow; their surfaces quite uneven. Only the right posterior condyloid foramen developed and very small; fossa on this side shallow; the one opposite deep.

### *Measurements.*

Capacity .....	c. cm. 1380
Length .....	mm. 153
Breadth .....	156
Breadth of frontal .....	128
Height .....	142
Frontal arch .....	316
Parietal arch .....	370
Occipital arch .....	240

Longitudinal arch.....	mm. 338
Circumference .....	495
Length of frontal.....	115
Length of parietal.....	130
Length of occipital .....	163
Zygomatic diameter.....	123

In order to show the resemblance between the skulls from Southern Colorado and New Mexico, described on the preceding pages, and those of the ancient Peruvians, the diagram, Fig. 14 on Pl. 29, was drawn. Before referring to the latter, we may be allowed to recall the fact that there are two different types of Peruvian skulls, one kind being lengthened similarly to those of the *Macrocephali* of Hippocrates,\* and found chiefly in the chulpas near Lake Titicaca, while those from other localities, and not met with under the "burial towers," are shortened by compression of the occipital region. We hardly need to state that the type alluded to here is the latter one.† The skull, whose profile is represented by the less heavy lines, belongs to the collection of the United States Army Medical Museum. It bears the number 250 of the catalogue, and is designated as "Pachacamac skull, from Peru." Viewed from above it is similar in outline to skull 1179, previously described (represented in heavy lines on the diagram). Its frontal bone only proves to be more receding and elongated than that of the latter, it being, besides, a little longer, and in the norma verticalis we perceive the zygomatic bones, the nasals, and the upper maxillæ, to project more beyond the general outlines of the cranium than it is the case with No. 1179. It is rather thick and heavy, apparently male, with pronounced muscular insertions. Those of its measurements that may be of interest in our case are as follows :

Length.....	mm. 162
Breadth.....	156
Breadth of frontal .....	118
Length of frontal.....	119
Circumference.....	505

The dotted profile line of the diagram is that of skull No. 276 of the catalogue above mentioned, and designated as "Cranium of pure Indian. Coban, Guatemala." Viewed from above it appears slightly asymmetrical, the left parietal being compressed at its posterior portion, between the lower third of the sagittal suture, the tuber, and the squamosal. The zygomatic bones and the malars project beyond the general outline of the cranium in this position, and likewise the superciliar ridges and the nasals, the greatest breadth being found a little below the parietal tubers. Apparently male; muscular insertions very pronounced; skull heavy and thick.

As measurements of interest I shall give :

Length.....	mm. 162
Breadth.....	142
Breadth of frontal .....	112
Length of frontal.....	122
Circumference .....	481

\*Magni Hippocratis medicorum omnium facile principis opera omnia quæ exstant, nunc denuo latina interpretatione et annotationibus illustrata, Anutio Foessio Mediomatrico medico autore. Francofurti, MDCXXIV, page 289.

† Mariano Eduardo de Rivero y Juan Diego de Tschudi, *Antigüedades Peruanas*, Vienna, 1851, p. 25, where the type in question is represented, with two others, the authors distinguishing three types on rather trivial grounds. A large view of the type under consideration is also figured in the atlas accompanying the volume, Plate V.

In order not to crowd and confuse the diagram we omitted the outline of skull No. 3, the frontal portion of which (even to the superciliary ridges) would almost overlap that of the Peruvian. It will be seen that the general character of the profile views of the three skulls is not very different, the Abiquiu cranium showing the greatest height, the steepest forehead, and an almost straight occipital outline, while that from Coban is intermediate between the two others. The cranium having the greatest length is that of the Peruvian, viz, 162<sup>mm</sup>, differing only 1<sup>mm</sup> from that of the Coban Indian. In the diagram this difference seems to be greater, as the occipital outline of the Peruvian projects considerably beyond that of the former; but if we come to examine the receding frontal of the latter and remember that the greatest length lies between the glabella and the most prominent point of the occiput, then the features of the diagram appear to be quite normal. A comparison of the breadth of the crania bears out the fact that the measurements of the Peruvian and Abiquiu Indian coincide exactly, they being both 156<sup>mm</sup>, while that of the Coban Indian gives 12<sup>mm</sup> less. In regard to the breadth of the frontal bone the Abiquiu skull exhibits the maximum, viz, 128<sup>mm</sup>; next to this is the Peruvian, namely, 118<sup>mm</sup>; and finally the Coban Indian, measuring 112<sup>mm</sup> only. The length of the same bone is greatest in the Coban Indian, its measurement giving 122<sup>mm</sup>, that of the Peruvian being 3<sup>mm</sup>, and that of the skull from Abiquiu 7<sup>mm</sup> shorter. The Peruvian skull being the longest among the three, has also the most considerable circumference, namely, 505<sup>mm</sup>, while the Abiquiu Indian measures 495<sup>mm</sup> around, and the skull from Coban 461<sup>mm</sup> only.

After this paper had been placed in the hands of the printer, the United States National Museum at the Smithsonian Institution received a box with relics exhumed from mounds in Tennessee, which happened to be opened in my presence. Besides several cubic feet of bone fragments it contained two crania, showing exactly the same mode of deformation as the skulls obtained in the vicinity of the ruins. And indeed the resemblance between the crania from those two different localities is so great that they might readily be confounded.

It being too late to present cuts of these specimens, I shall limit myself by describing the same, designating one by A and the other by B.

#### *Cranium A.*

Very light and smooth, and apparently that of a woman. As the eruption of the last molars had taken place, the individual must have been at least twenty-one years of age when it died; that is, if we are justified in using the same criterion in judging the age of an Indian as we do in judging that of a white man. Taking into consideration that the skull was taken from a mound, it is in a tolerable state of preservation; the left zygomatic bone and the styloid processes being broken, however, and the upper jaw containing but six teeth. The condition of the lower is less good, there being only three teeth left, the rami being rather defective and the condyloid and coronoid processes wanting.

Viewed from above, the skull is irregularly heart-shaped; the irregularity being produced by the compression of the left parietal. The compression extends from a plane laid horizontally through the tubers, from the right tuber down to the squamous and occipital sutures, so that the left bone and tuberosity seem to protrude considerably. Serration of the sagittal suture strong, the two parietals grooved at their line of junction. The zygomatic bones project but slightly beyond the general



outline of the cranium; the malars, the maxillæ and the nasals more so, especially the latter.

The two profiles show somewhat different features. While the outline of the occipital region, when viewed from the right, is almost perpendicular, that of the left slopes at a slight angle, and the left parietal tuber appears more prominent in this view than the right. Zigoma and malar thin; forehead straight; frontal tubers not projecting; angle between frontal and nasals sharp; anterior nasal spine prominent; upper maxillæ but slightly prognathous.

A facial view discloses a rather narrow forehead, frontal tubers, which are very slight, standing close together, no superciliary ridges, supra-orbital ridges very slight, the right one showing two foramina. Orbits rather oval and nose broad. Maxillæ smooth; canine eminence very slight. Remaining teeth showing but little wear; the crowns of the two first molars being worn down most.

Viewed from behind, the outline represents an irregular hexagon. Parietals sloping roof-like from the apex to the tubers, from there almost straight to mastoid portion of the squamosal. From the mastoids the slightly curved outlines converge toward the posterior margin of the great foramen. The left portion of the lambdoidal suture contains three Wormian bones, one fourteen millimeters long and about five wide, being situated in its upper third, while the two others of smaller dimensions, at least in regard to length, are close together, almost touching the lower extremity of the suture. Superior curved line well pronounced, the same being the case in regard to the inferior. Muscular insertions of the left side more marked than those of the right, especially the depression for the rectus capitis. Mastoid processes obtuse.

In a base view the compression of the left side of the skull shows hardly as much as from above, and the asymmetry does not extend over the whole base as it did in several of the other instances.

In taking the dimensions, the zygomatic diameter could not be ascertained very accurately; the probable error of measurement is, however, supposed to be not more than  $\pm 1^{\text{mm}}$ .5. As the skulls are not yet cleaned, the internal capacity was not measured.

### *Measurements.*

	<i>mm.</i>
Length .....	156
Breadth .....	141
Breadth of frontal .....	109
Height .....	142
Frontal arch .....	277
Parietal arch .....	330
Occipital arch .....	227
Longitudinal arch .....	335
Circumference .....	470
Length of frontal .....	115
Length of parietal .....	128
Length of occipital .....	160
Zygomatic diameter .....	124

### *Cranium B.*

The whole facial portion being broken off, only the cranial portion of the skull is left, and this is rather defective, as the left squamosal and the anterior part of the occipital are wanting. Cranium very light, showing smooth surfaces; age doubtful, but the individual was evidently younger than that from which skull A was derived.



Viewed from above, it appears like a rounded oval, occipital region flattened, right side more than left, asymmetry slightly less than in other specimens. Parietal tubers prominent. Serration of sutures fine.

The right profile, which is more complete than the left one, shows an almost perpendicular but slightly outward curved outline of the occipital region, while in the left view the occipital is seen to bulge out to considerable extent. Temporal ridge narrow and sharp. Mastoid process narrow and small.

A front view shows nothing but the narrow and straight forehead, with tolerably developed tubera, and very slight superciliary ridges.

Viewed from behind, the roof of the skull appears rather flat, with only a slight curvature of the parietals from the sagittal suture to the tubera, while the rest of the outline is similar to that of skull A. Serration of lambdoidal suture complicated. Muscular insertions of the lower portion of the occipital tolerably developed.

Owing to the defective condition of the skull only a limited number of measurements could be obtained. In taking those of the frontal and parietal arches and of the circumference only one-half of the actual distance was measured, and in consequence of this the numbers thus derived had to be multiplied by 2 in order to get the whole dimensions.

#### *Measurements.*

	<i>mm.</i>
Length .....	153
Breadth .....	140
Breadth of frontal .....	118
Frontal arch .....	280
Parietal arch .....	222
Occipital arch .....	212
Circumference .....	460
Length of frontal .....	129
Length of parietal .....	131

#### GENERAL CONSIDERATIONS.

Disregarding the two skulls obtained from the Tennessee mounds, we notice, as characteristics of the others, the great height and breadth of the cranium, which is most decidedly brachycephalic. As the skulls are deformed we refrain from calculating the indices of height and breadth.

Denoting the excess of the longitudinal diameter as compared with the transverse one as positive, and that of the transverse diameter as compared with the longitudinal one as negative, we obtain the following values:

Designation of skull.	L. B.
No. 1 .....	+ 24 <sup>mm.</sup>
No. 3 .....	+ 19
No. 1778 .....	+ 13
No. 1779 .....	+ 3

It will readily be seen that the adult Abiquiu skull (1779) is more broad than long, while the others are somewhat longer than they are broad. If we were to calculate the index of breadth we would notice it to decrease in the order adopted in the table, from skull No. 1779 upward. How far the brachycephalic character is due to deformation cannot be decided by means of the limited number of specimens on hand, but according to the general features of the skulls, we consider ourselves justified in saying that originally they were brachycephalic, and that in consequence of the deformation of the occiput the brachycephalic character is brought to view more strikingly than it would be if the skulls had not been

compressed. We do not hesitate to express this opinion, although it appears from Welcker's extensive investigations\* that brachycephalic skulls are mostly orthognathous, while those described above are all more or less prognathous.

Now the question arises, was the deformation to be found among the ancient inhabitants of the ruins generally, or only in some instances? Was it practiced as a rule, or is the compression only more or less accidental? As the five skulls before us show the most unmistakable signs of deformation, it is more than probable that the compression of the skull cannot have been of rare occurrence, for it is scarcely possible that, by a mere accident only, the deformed crania should have been found by the collectors, while others, showing normal features, should have escaped their observation.

If deformations of this kind are practiced, as a rule, among savages or civilized people, there is always a guiding idea,† either emanating from æsthetical feelings or with reference to some practical purpose. For instance, among the ancient Peruvians the flattened skulls were considered a sign of aristocracy and high breeding, while in other cases, as among the inhabitants of the northwestern corner of Europe,‡ the skulls of the children were deformed in early youth in such a manner as to produce a more or less straight line of profile, which we are accustomed to admire in the Greek ideal of human beauty.

That the idea of the beautiful was developed to an uncommon extent among the inhabitants of the ruins is borne out by the fact that the fragments of pottery found show simple but tasteful ornamentation, that great regularity prevails in the structure of their buildings, both in the square and round ones, and that other pieces of their handiwork would even gratify our own æsthetical feelings. As symmetry is found everywhere among their buildings, even where an educated eye would require it, there is no reason whatever to suppose that the taste should comply with these requirements in one instance and not in the other. Why should people who bestow so much care upon a door, in order to make it symmetrical, or upon a piece of pottery, to make it perfect in shape, try, in case they practice deformation of the skull, to produce an asymmetrical form, such as is found in the greater number of our crania?§ Wherever deformation of the skull is made a practice, the mother, or whoever may be in charge of the child, performs this operation with the utmost care, in order to produce the conventional shape, which is almost symmetrical in every instance; and some time ago, when we had occasion to examine about 200 flatheads, we found but few that were not symmetrical.

Under such circumstances we are justified in believing that the deformation of the skulls in question is more or less accidental, and, taking the mode of depression into consideration, there cannot remain any doubt in regard to the way the skulls were distorted. Evidently the ancient inhabitants of the ruins were in the habit of strapping their children against cradle-boards, as a great many modern Indians do, and hence resulted the flattening of the occiput.||

\* Untersuchungen neber Wachsthum und Bau des menschlichen Schädels von Hermann Welcker. Erster Theil. Leipzig, Wilhelm Engelmann, 1862, pp. 63 and 90.

† Andreae Vesalii Opera Omnia Anatomica et Chirurgica, cura Hermann Boerhaave et Bernhardii Siegfried Albini. Lugduni Batavorum, MDCCXXV, Tom. I, p. 16.

‡ Hippocrates: loc. cit., De aëre aquis et locis, p. 289.

§ As it seems, asymmetry is not met with very seldom among the ancient Peruvian skulls. Compare Morton's *Crania Americana*, Pl. X.

|| As Major Powell kindly informs me, the different Indian tribes he is familiar with keep their children strapped to the cradle-board from between one and a half to two years.

With reference to this question, we examined a considerable number of Indian skulls contained in the collection of the United States Army Medical Museum, but we must confess that among the modern ones we did not meet with any deformation that could reasonably be attributed to the influence alluded to. Among a series of skulls exhumed from mounds in Kentucky, No. 723 is deformed very slightly, while No. 730 shows a pronounced depression of the lower and posterior portion of the left parietal bone, and in No. 242 we meet with an almost perpendicular occiput, perceptible especially when viewed from the right side. A considerable number of crania from mounds near Vicksburgh, Miss., could not be used to strengthen our argument, as they are all, with scarcely any exception, deformed intentionally and in every possible direction.

Having obtained these rather negative results, we examined the collection of Indian cradles contained in the National Museum, trying to establish some relation between the construction of the cradle-board and the mode of deformation of the skull. If we were to judge from the specimens as they present themselves at the Smithsonian Institution, we might under the circumstances arrive at erroneous conclusions, as most likely the majority of these cradles are incomplete, consisting in most cases of scarcely anything but the frame-work. Probably, some tribes prepare the head-rests for the children more carefully than others, and the deformation of the skull will be found accordingly.

Unfortunately, there are no skulls of Indian tribes that now inhabit the vicinity of the region in question within our reach, and therefore we are unable to draw any comparisons or to point out cranial affinities that might exist between the ancient inhabitants of the ruins and the people that now live near those deserted dwellings.

According to other evidence, however, there is not much room left to doubt that the present Pueblo Indians are the direct descendants of the ancient inhabitants of Southern Colorado and New Mexico, although there are either no traditions preserved pointing toward this direction, or the few that do exist are of too vague a nature to be relied upon. As one of the arguments in favor of this view, we may take the mode of constructing the houses. The structures erected by the present Pueblos do not differ materially from the majority of dwellings built by the ancient architects. The whole modifications the former offer are merely due to the different topographical features of the ground on which they stand, and to the influence of the white race, as can readily be proven. In the present mode of constructing the dwellings, there is, however, one detail worthy of attention and further investigation. We mean the arched building,\* as there are but two tribes inhabiting this continent whose architectural skill proved efficient enough for this purpose, namely, the Peruvians and the Eskimos. As the dome-like structure is only found among this race (besides the people just mentioned), it would be worth while to investigate whether this style of architecture is original or adopted from the Spaniards, and whether it is of rare occurrence or to be met with frequently.

As another evidence in favor of the view that the present Pueblos are the descendants, or rather the remnant, of the ancient cliff-house builders, we may take the pottery found near the ruins. The shape of the pots now in use among the Pueblos is the same as that of the few pieces brought east; so are the ladles with their characteristic hollow handles, and the ancients were in the habit of burying their water-jugs in the ground in order to keep them cool, just as we see it practiced

\* "Descending to the chamber by a ladder, it was found probably 25 or 30 feet in diameter, *arched above*, and about 20 feet high."—Report of Chief of Engineers, p. 1067.

now. If we were to take the pattern of the primitive ornaments as a criterion—which is, however, not permissible, as certain figures are found in all parts of our planet, wherever people are far enough advanced to invent and to use ornaments—we would meet with the same designs in both instances, only that in the majority of cases the ancient ornamentation is more careful, and exhibits besides more artistic feeling on the part of the workmen than that of the modern.

The most striking peculiarity of a large number of fragments of pottery found near the ruins, and hitherto never noticed in America, is the existence of a regular glazing of great hardness. How this glazing was produced cannot be ascertained without considerable difficulty. In some instances it is rather opaque, whitish, and covers the surface of the fragment in a thick layer, while in others it is perfectly transparent or shows a slight bluish hue. The colors used in painting the pottery are the same as now, namely, a reddish-brown, brown, and black; the former being produced by iron and manganese, the latter consisting of an organic substance, the character of which could not be determined. Until we shall have some accurate analysis, which will be rather difficult to make, we may perhaps call this organic substance charcoal, mixed intimately with fine clay before it was used for painting, and prevented by the siliceous cover from being destroyed by the heat while the vessel was being baked. A closer examination of the different patterns demonstrates that the painting was done in a very careful, in some instances hesitating, manner, and it seems that a great deal of time was devoted to this process. There are several fragments on which we may easily recognize the method followed by the artist, and notice how he drew his outlines and how he afterward painted the rest of the square or triangle.

The facts bearing upon the probable age of the human remains are rather contradictory, and it is difficult to make them agree and to draw some satisfactory conclusions. Evidently, the buildings near which they were found represent different ages of perhaps considerable periods of time. How far back the earliest ones may date can scarcely be surmised, but there are some instances, resting however on rather unsatisfactory bases, that might give us some clew as to the approximate time the buildings were abandoned.

Mr. Jackson states that he noticed several places that appeared to have been used as corrals, and from Dr. Endlich I learn that he discovered a stratum ten feet below the surface of the soil, containing, besides fragments of pottery, numerous bones of sheep. Now, nothing would be more tempting than to combine these two facts, and to conclude that the people in question domesticated sheep, which could not have been done during the pre-Columbian period, as this animal does not belong to the American fauna.

Among a collection of arrow-heads and minor stone chips I noticed a glass bead, which is, beyond doubt, of Venetian workmanship, and very similar to beads exhumed lately from the grave-mounds at Santa Barbara, Lower California, and preserved at the National Museum. If the bead in question did not find its way accidentally to the ruins through some Indian of a later period, we might consider it as a proof in favor of our view; but at the same time we must not forget that no trace of any metal was found in the graves, as we might have reasonably expected, since the cliff-house builders communicated directly or indirectly with the inhabitants of the Pacific coast. This latter fact is supported by the presence of a considerable quantity of shells of *Olivella gracilis*

used as beads, and by a large spine-fragment of a recent *Echinus*, which I noticed among some pieces collected by Mr. Jackson.

It would exceed the limits of these pages, to the preparation of which we could devote but a few days, to make any further remarks which would so readily suggest themselves. Evidently, the ruins in question bear testimony of one of the earliest centers of civilization in this country, and would well repay the investigations of a critical anthropologist. Let us hope that ere long such investigation may be undertaken.

N. B.—All the drawings contained in the following plates are orthographic figures, made by means of a diopter, and reduced with a pantograph from natural size.

#### PLATE 23.

Fig. 1.—Lateral view of skull No. 1.

Fig. 2.—Frontal view of the same.

#### PLATE 24.

Fig. 3.—Occipital view of skull No. 1.

Fig. 4.—Lateral view of the same.

#### PLATE 25.

Fig. 5.—Basal view of skull No. 1.

Fig. 6.—Lateral view of skull No. 2.

#### PLATE 26.

Fig. 7.—Frontal view of skull No. 2.

Fig. 8.—Occipital view of the same.

#### PLATE 27.

Fig. 9.—Vertical view of skull No. 2.

Fig. 10.—Basal view of the same. Owing to the faulty shading of the occipital region, the occipital bone does not appear to turn upward as abruptly from the posterior margin of the great foramen as it actually does.

#### PLATE 28.

Fig. 11.—Frontal view of skull No. 3.

Fig. 12.—Vertical view of the same.

#### PLATE 29.

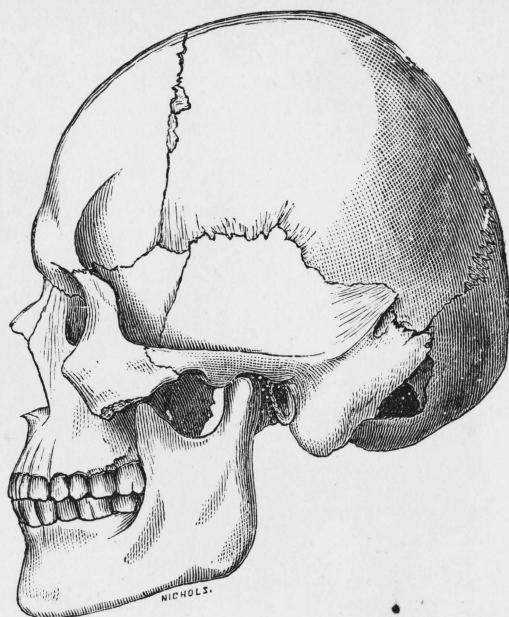
Fig. 13.—Lateral view of skull No. 3.

Fig. 14.—The heaviest outline of the diagram represents a profile-view of skull 1179 (Catalogue U. S. A. Med. Museum) from Abiquiu. The less heavy line represents the same view of a Guatemala Indian, No. 276 of the catalogue, and referred to on page 56, while the dotted line represents the profile of a Peruvian, No. 250 of the catalogue, and mentioned on the same page.

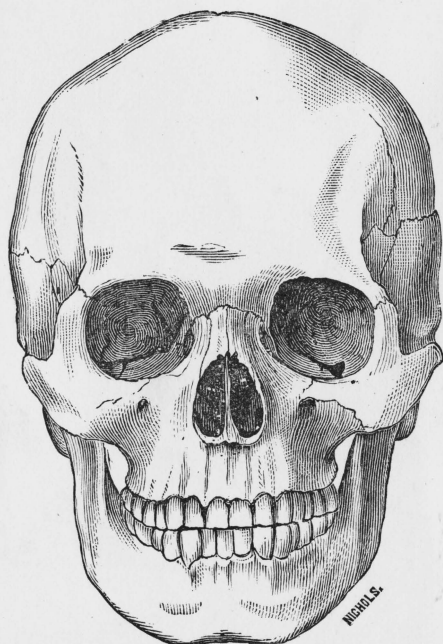




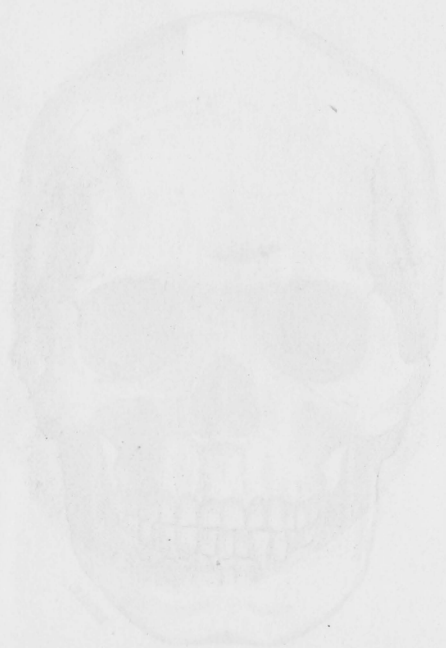


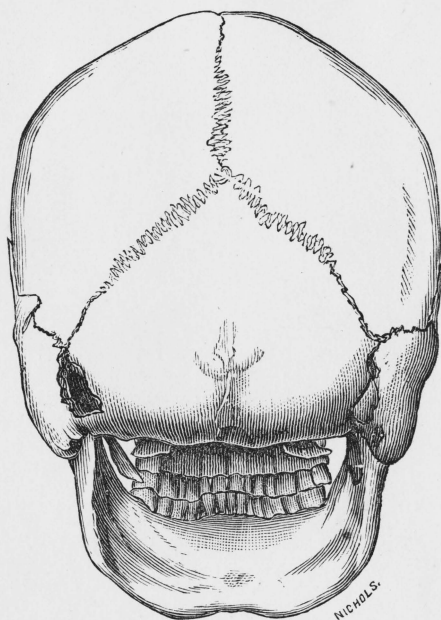


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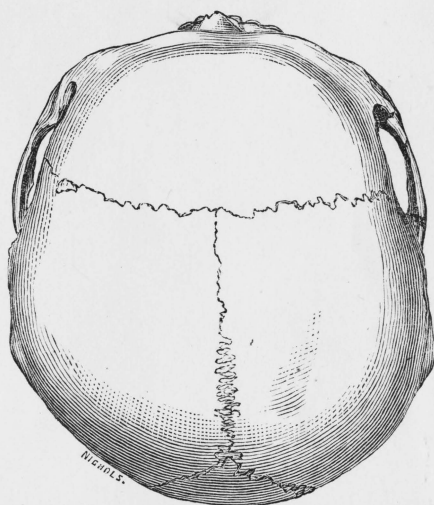


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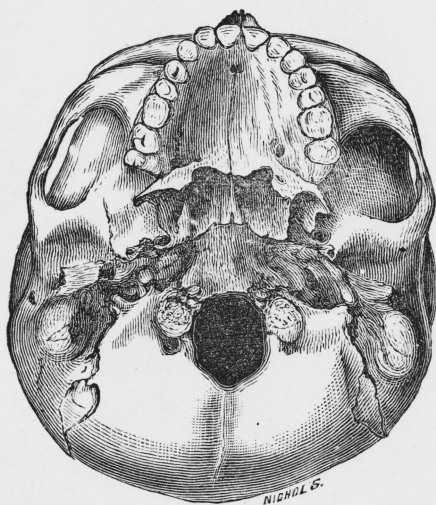


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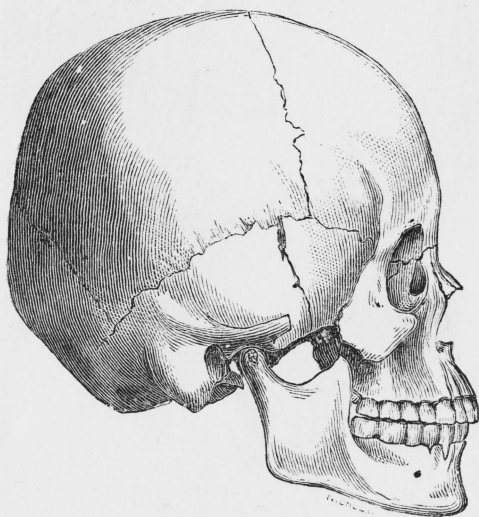


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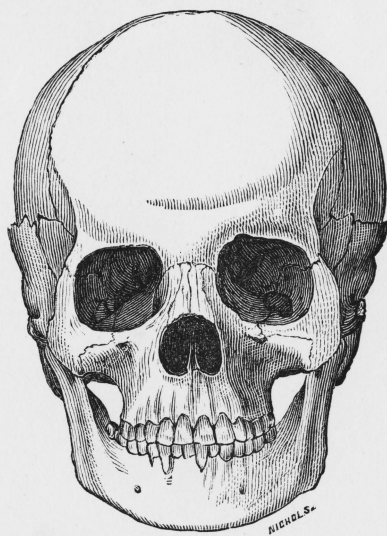
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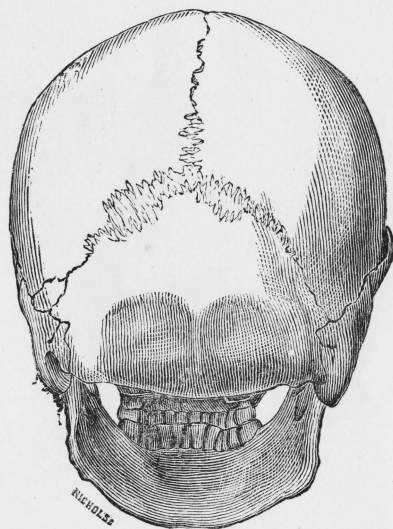
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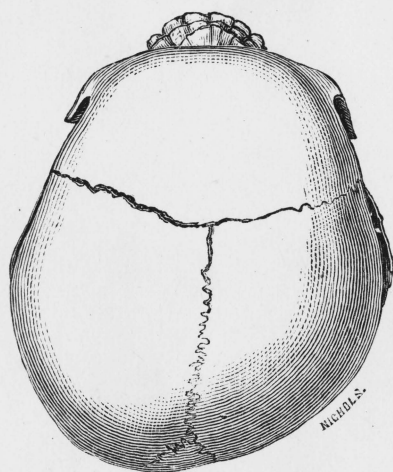


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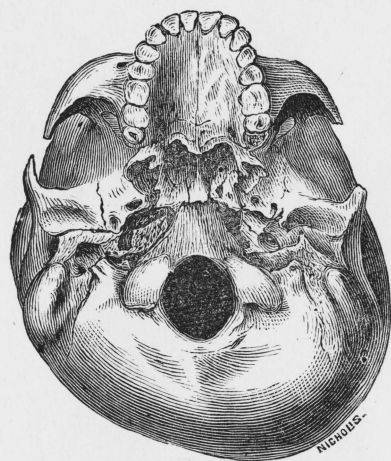


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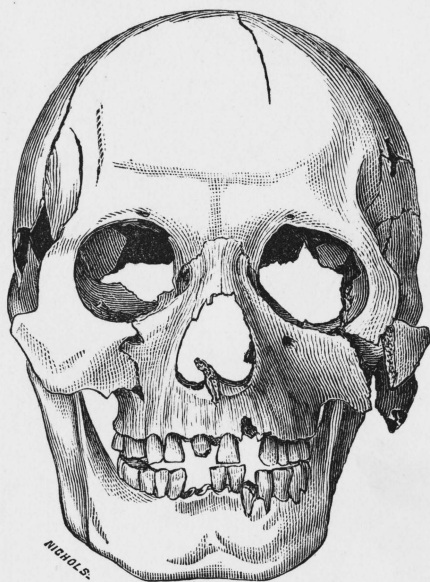


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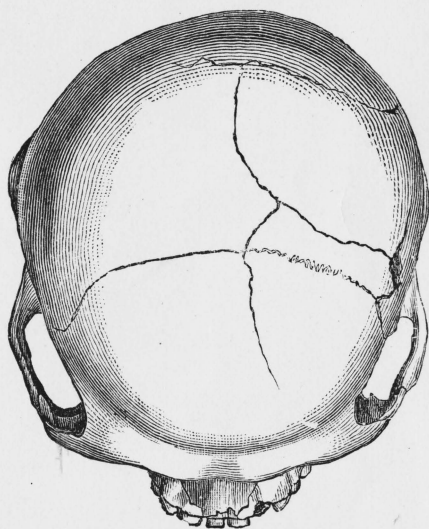


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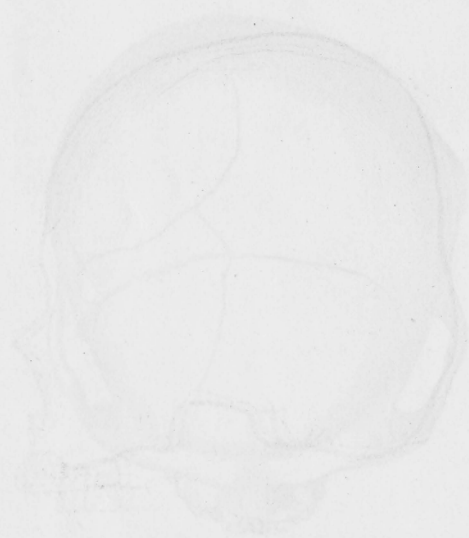
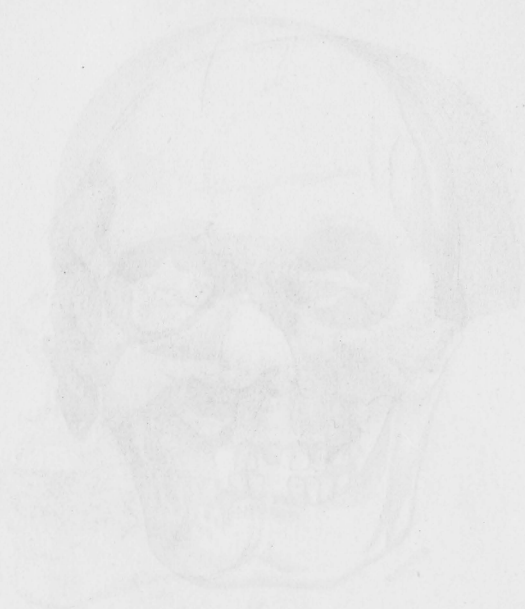




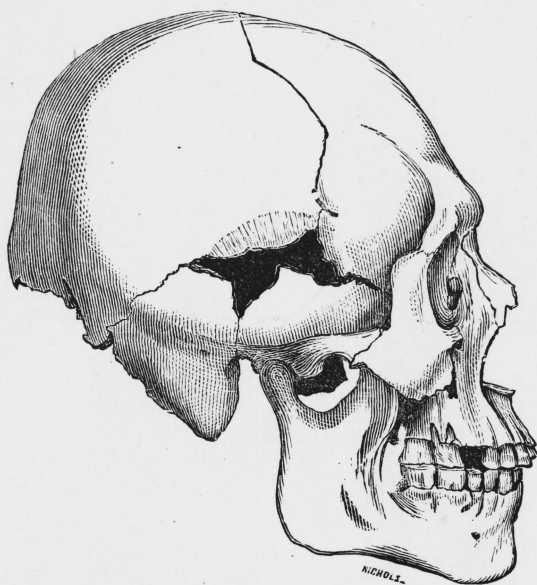
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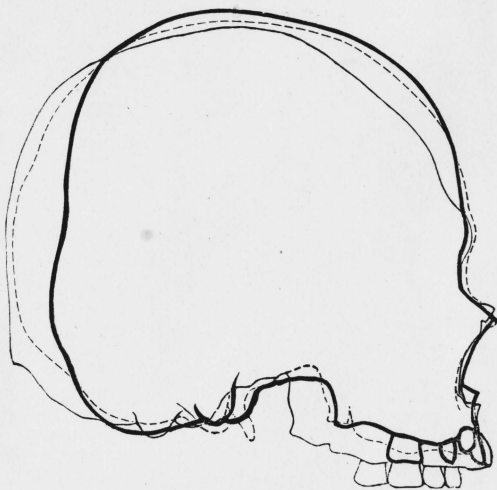
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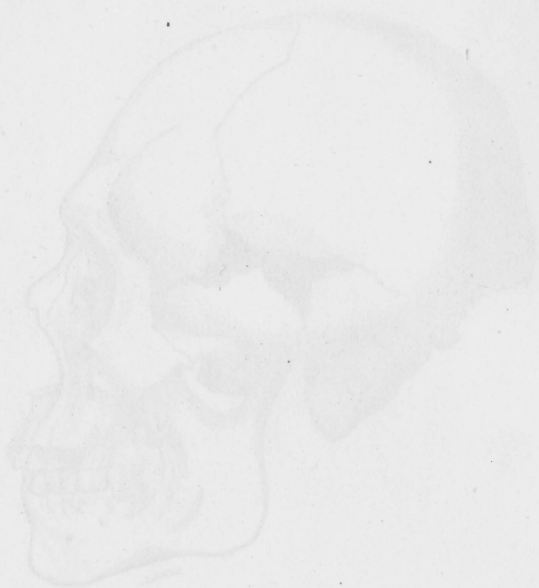




13.



14.



81



82

THE  
PRE-HISTORIC REMAINS

WHICH WERE FOUND

On the Site of the City of Cincinnati, Ohio

WITH A

VINDICATION

OF THE

“CINCINNATI TABLET”

By ROBERT CLARKE

CINCINNATI  
1876



# PRE-HISTORIC REMAINS

AT CINCINNATI, OHIO.

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THE first notice we have of the existence of ancient works on the site of the city of Cincinnati is in a letter addressed to Dr. Benjamin S. Barton, of Philadelphia, by Colonel Winthrop Sargent, Secretary and Governor *pro tem* of the Northwest Territory, dated Cincinnati, September 8, 1794, and published in the *Transactions* of the Society, vol. 4, p. 177. With this letter, he sent drawings of a number of articles found in a grave near the mound which stood on the northeast corner of Third and Main streets. These articles were afterward presented to the Society, and are figured on two plates, which follow the letter in the volume, with explanations of their character, etc. He had, however, little knowledge of mineral substances, and made some mistakes as to the materials of which some of the articles were composed, which were corrected by Judge George Turner, in a communication to the Society dated November 25, 1799, which is published in the 5th volume of the *Transactions*, p. 74.

These relics are also the subject of a long letter from Dr. Barton to Rev. Joseph Priestley, which occupies pp. 181 to 215 of vol. 4 of the *Transactions*.

Colonel Sargent describes the location in which these relics were found, as follows:

“The body with which this collection was interred, was found lying in nearly a horizontal position, about five feet from the sur-

face of the earth, with the head toward the setting sun, and at the southwest side of, or about fifteen feet from, an extensive mound of earth, raised probably for the purpose of a burial-ground, upon the margin of the second bank of the Ohio river (suddenly rising fifty feet above the first), and now elevated, in the extreme, eight feet from the general level of the same, with a gradual slope in the various directions, and a base of about one hundred and twenty feet by sixty. One of the main streets of the town passes through the western part of this grave, and in the frequent repairs of the acclivity, human bones have often been found. . . . I should not omit to mention to you, that upon this mound are stumps of oak trees seven feet in diameter."

This mound was, however, merely an appendage to the general works on the upper plain, mentioned by Colonel Sargent, but not described. The first description of them is given by Dr. Daniel Drake in his *Picture of Cincinnati*, published in 1815. This I will use freely in endeavoring to give an idea of the character of the works.

Cincinnati is built on two levels or benches of an alluvial plain, surrounded on the east, north, and west by hills of the lower silurian limestone—on the south is the Ohio river. On the lower level, or "bottom," no works of the mound-builders existed. Of this, however, we have only negative evidence; if any works existed on it, they may have gradually been obliterated by the overflow of the Ohio river, to which the bottom is subject. The "hill," as it was called in early days, rose from fifty to seventy feet above the bottom, and in its natural state was quite abrupt, but is now, of course, graded down to suit the exigencies of a city. It commenced near Deer Creek, in the eastern part of the city, about two hundred feet distant from the Ohio. Thence



westward, following about the course of Congress and Third streets, it receded from the river till the bottom attained a width of from eight hundred to twelve hundred feet, when it gradually merged into Mill Creek bottom on the west, facing which the bank became more irregular and more gradual in its slope.

The central work, a large, broad ellipse, was located about three hundred and fifty feet from this bank, and extended from the west side of Race street nearly to Walnut, and from a little above Fifth street to a little below Fourth street. It was about eight hundred feet from east to west, and six hundred and sixty feet from north to south. It consisted of an embankment three feet high, with a base of thirty feet, and was composed of loam, evidently taken from the neighborhood. There was no ditch on either side, and, within the wall, the ground had its natural uneven or waving surface, with nothing to indicate manual labor expended in leveling or grading. On the east end, there was an opening or gateway of about ninety feet, and on each side of this, exterior and contiguous to the embankment, was a broad elevation or parapet of an indeterminate figure. From the southern one, a low embankment one foot high with a base of nine feet extended southward to within a short distance from the top of the bank, which it then followed eastward until it connected with the mound, mentioned by Colonel Sargent, on the corner of Third and Main streets, over five hundred feet distant.

From the parapet on the opposite side of the gateway, no bank of this kind could be traced; but immediately north of it, at a short distance, were two shapeless and insulated elevations more than six feet high.

About four hundred yards east of this central work, between Sycamore and Broadway, was another embankment, apparently the segment of a large circle, of the same dimensions as the last mentioned, one foot high, with a base of nine feet. It could be traced from Sixth street to near the edge of the hill above Third street. Dr. Drake says :

“From near the southern end of this segment to the river, a low embankment, it is said, could be formerly traced, and was found to correspond in height, direction, and extent with another, more than half a mile distant in the western part of the town, but neither of these are now visible.”

I think this is doubtful, as it would extend the works to the bottom land, on which mound-builders' works are seldom anywhere found. It is more probable that this embankment turned westward and joined the other embankment at the mound.

On Fifth street, east of Broadway, and about four hundred feet from this segment, was a circular bank inclosing a space sixty feet in diameter, formed by throwing up the earth from the inside. It was not more than a foot in height, but twelve to fifteen feet wide.

In the northern part of the town, between Vine and Elm streets, and the Miami Canal and Twelfth street, at a distance of about six hundred yards north of the central work, there were a couple of convex earthen banks, seven hundred and sixty feet long and less than two feet high, connected at each end. They were exactly parallel and forty-six feet apart, measuring from their centers for two-thirds of their distance, after which they converge to forty feet. In the southern, about the point where their inclination to each other com-

mences, there was an opening of thirty feet wide. The direction of these elevations, as ascertained by the compass, did not vary two degrees from a true east and west line.

"Of excavations, we have but one. It is situated more than half a mile north of the figure first described, and is not perceptibly connected with any other works. Its depth is about twelve feet ; its diameter, measuring from the top of the circular bank formed by throwing out the earth, is nearly fifty. Popular speculation could not fail to make it a half-filled well, but no examination has yet been undertaken."

This work was near the southwest corner of Liberty and Plum streets.

The mounds found on this plain were four in number. The one already mentioned, on the corner of Third and Main streets, was the only one connected by embankment with the central work. Dr. Drake says :

"It was about eight feet high, one hundred and twenty feet long, and sixty broad, of an oval figure, with its diameters lying nearly in the direction of the cardinal points. It has been almost obliterated by the graduation of Main street, and its construction is, therefore, well known. Whatever it contained was deposited at a small distance beneath the stratum of loam which is common to the town. The first artificial layer was of gravel, considerably raised in the middle ; the next, composed of large pebbles, was convex, and of an uniform thickness ; the last consisted of loam and soil. These strata were entire, and must have been formed after the deposits in the tumulus were completed."

The articles found in this mound and in the graves around it exhibit a high degree of skill in cutting and polishing the hardest rocks. Of those before mentioned as figured in the *Philosophical Transactions*, Vol. 4. Figs. 1 to 5 represent plummet-like objects, "finished

as if in a turning-lathe." These are supposed to have been used in weaving, or as sinkers in fishing. It is asserted by some observers that they are never found except near deep rivers. Judge Turner gives the materials of which they are composed as follows: Fig. 1, greenish-gray porphyry; Fig. 2, jasper; Fig. 3, pure, transparent crystal; Fig. 4, granite; Fig. 5, a ferruginous stone, perhaps of volcanic origin (hematite?). Fig. 7 is a circular ring figure, made from cannel coal, with a wide and deep groove in the outer edge; Fig. 8, similar to the last, but smaller, made from a fat, argillaceous stone, capable of a fine polish; Fig. 6 represents a finely carved head and beak of an "eagle, or other rapacious bird, the upper mandible having a cultrated point, the distinguishing mark of birds belonging to this class;" this figure shows considerable skill in the art of carving; Fig. 9, a small piece of thin copper, with two perforations; Fig. 10, a sheet of copper, bent into a tube, corrugated on one side, evincing some proficiency in the manipulation of the metal; Figs. 11 and 12, the two sides of a bone, with "hieroglyphics" on each; this is but a fragment—the design is so curious that it is a matter of regret that it was not found more perfect.

Besides the above, Dr. Drake mentions, as having been found in the mound, a mass of lead ore (*galena*), lumps of which have been found in other tumuli; a quantity of mica; a number of beads, or sections of small hollow cylinders, apparently of bone or shell; the teeth of a carnivorous animal, probably those of a bear; several large marine shells, belonging to the genus *buc-*

*cinum*, cut in such a manner as to serve for domestic utensils, and nearly converted into a state of chalk.

“Several copper articles, each consisting of two sets of circular concavo-convex plates; the interior of each set connected with the other by a hollow axis, around which had been wound a quantity of lint, the whole encompassed with the bones of a man's hand. Several other articles resembling this have been dug up in other parts of the town. They all appear to consist of pure copper, covered with the green carbonate of that metal. After removing this incrustation of rust from two pieces, their specific gravities were found to be 7.545 and 7.857. Their hardness about that of the sheet copper of commerce. They were not engraved or embellished with characters of any kind.”

### There were also

“Human bones. These were of different sizes; sometimes enclosed in rude coffins of stone, but oftener lying blended with the earth, generally surrounded by a portion of ashes and charcoal. The quantity of these bones, although much greater than that taken from the other mounds of the town, was small in proportion to what was expected—the whole tumulus not having contained, perhaps, more than twenty or thirty skeletons. With a view of comparing these bones with those of the present Indian tribes, I endeavored to collect and preserve them; but they were generally in such a state of decay that nothing more could be inferred than a sameness in the height of the two races. At length I was so fortunate as to procure the skull, nearly entire, of a middle-aged man, and have compared it with that of a Wyandot Indian presented to me by John Johnston, Esq. The facial angle of the ancient, which may be termed the fossil skull, is  $74^{\circ}$ , that of the Wyandot  $76^{\circ}$ , and in their length and breadth there is but little difference. On placing and examining them, however, in the manner directed by Blumenbach, it is seen that a section made through the forehead and the occiput would exhibit in the fossil skull almost a regular oval; in the Wyandot, the figure of an egg cut lengthwise, after being flattened at its smaller end. The face of the Indian head, moreover, is shorter and broader than that of

the fossil; the upper jaw projects less, and the cheek-bones are more distant, broad, and prominent. Those of the fossil skull are, however, of greater height than the cheek bones of most European faces. But what little reliance is to be placed on a single comparison appears from this—that the upper part of another skull found in this tumulus exhibits the same horizontal section with the Wyandot, except that the forehead is remarkably convex, instead of being flattened. The fossil teeth which I have seen were generally sound, and had nothing peculiar in their figure.”

Like so many others, this was, doubtless, a mixed mound, and Dr. Drake supposed all the human remains found in it were those of the mound-builders.

The largest mound stood near the intersection of Fifth and Mound streets, about five hundred yards west of the central work, but not connected with it by any embankment. Dr. Drake says (in 1815):

“Its present height is twenty-seven feet. About eight feet were cut off by General Wayne, in 1794, to prepare it for the reception of a sentinel. It is a regular ellipsis, whose diameters are to each other nearly as two to one. The longer runs seventeen degrees east of north. The circumference at the base is four hundred and forty feet. The earth for thirty or forty yards around it is perceptibly lower than the other parts of the plain, and the stratum of loam is thinner, from which it appears to have been formed by scooping up the surface—which opinion is confirmed by its internal structure. It has been penetrated nearly to its center, and found to consist of loam gradually passing into soil, with rotten wood. The fruits of this examination were only a few scattering decayed human bones, a branch of deer’s horn, and a piece of earthenware containing muscle shell.”

The opening here referred to may have been the one still in the mound in 1840, when I first saw it. It was about five feet wide, seven feet high, and entered the mound about ten feet, on the southern end. A portion



of this end had, however, been destroyed before this time, as it was then nearly round and smaller than the size given by Dr. Drake.

In 1841, Mound street and the alley running west from that street between Fifth and Longworth streets, were graded, and in this operation the mound was almost entirely cut away. It was during this work that the stone known as the "Cincinnati Tablet" was found, as will be more particularly related hereafter.

Of the other two mounds, Dr. Drake says :

"At a distance of five hundred feet from this pyramid, in the direction of north eight degrees east, there is another about nine feet high, of a circular figure and nearly flat on the top. This has been penetrated to the center of its base, without affording any thing but some fragments of human skeletons, and a handful of copper beads which had been strung on a cord of lint."

This mound was near the northeast corner of Seventh and Mound streets.

"Northeast of the last, at a distance of a few hundred yards, is another of the same figure, but not more than three feet in height, which upon being partially opened has been found to contain a quantity of unfinished spear and arrow heads of flint."

This mound was on the east side of Central Avenue, opposite Richmond street.

The above are all the works noted by Dr. Drake, as found within the old limits of the city ; he adds, however :

"The site of the town exhibits many other inequalities of surface, which are no doubt artificial ; but they are too much reduced, and their configuration too obscure, to admit of their being described."

General Harrison, in an address before the Historical and Philosophical Society of Ohio, in 1837, says :

When I first saw the upper plain on which that city stands, it was literally covered with low lines of embankments. I had the honor to attend General Wayne two years afterwards in an excursion to examine them. We were employed a greater part of a day, in August, 1793, in doing so. The number and variety of figures in which these lines were drawn, was almost endless, and, as I have said, almost covered the plain. Many so faint, indeed, as scarcely to be followed, and often for a considerable distance entirely obliterated, but by careful examination, and following the direction, they could again be found. Now, if these lines were ever of the height of the others made by the same people (and they must have been to have answered any valuable purpose) or unless their erection was many years anterior to the others, there must have been some other cause than the attrition of rain (for it is a dead level) to bring them down to their then state. That cause I take to have been continued cultivation ; and as the people who erected them would not themselves destroy works which had cost them so much labor, the solution of the question can only be found in the long occupancy and the cultivation of another people, and the probability is that that people were the conquerors of the original possessors.—TRANSACTIONS, Vol. I, Part 2, p. 227.

It is as great a mistake to suppose that no relics belonged to the mound-builders but those found in the mounds, as that all found in them were placed there by that race. As a general rule, a mound was built over a single grave, that probably of a chief. The later Indians, however, very frequently buried their dead, and with them deposited various articles, in the ancient mounds ; but such burials were usually made near the surface, and the remains were found in a much better state of preservation than those contained in the original grave of the mound. It is doubtless true, also, that

the Indians, in adopting these mounds for sepulchral purposes, enlarged them by fresh deposits of earth, which, with the care they would naturally give to the resting-places of their own dead, would tend to the preservation of the mounds so used. This was evidently the case with the Mound street mound, such a succession of deposits being plainly visible during the progress of removal. Mr. Williams thus describes its composition and structure :

“The earth of the mound is composed of light and dark colored layers, as if it had been raised, at successive periods, by piling earth of different colors on the top. This appearance might have been produced by successive layers of vegetation and freezings, which were allowed to act on each layer before the mound received a succeeding addition to its height. In some parts, the layers are completely separated by what appears to have been decayed vegetable matter, such as leaves and grass, as the earth is in complete contact, except a very thin division by some such substance. In some places through the mound there are vacancies, evidently occasioned by the decay of sticks of wood, leaving a most beautiful, impalpable powder. Throughout the mound there are spots of charcoal, and in some places it is in beds. In one or two places which we observed, the action of fire upon the clay has left marks of considerable intensity.”—*AMERICAN PIONEER*, vol. 2, p. 196.

There were, however, other mounds not used and preserved in this way. Being composed largely of soil collected in the neighborhood, and exposed to the denuding action of rains, perhaps for centuries, they were gradually washed away until they were little above the level of the surrounding surface. They are generally recognized by the loose, flat, rough stones, which were used in making a receptacle and covering for the dead, projecting from the ground ; these were sometimes in

sufficient quantities to form a low stone mound. It is unusual in such tumuli to find any well preserved human remains; a few teeth, with the offerings and implements deposited with the bodies, being all that remain to indicate the character of the place. The relics found under such circumstances are more likely to be the undoubted work of the true mound-builders than many of the articles found in the better preserved mounds.

Such remains of sepulchral mounds are quite distinct from the Indian graveyards, as they are called, which are so numerous in the western country. The latter are usually on level ground, contain large numbers of skeletons in a more or less well preserved condition, and evidently were never covered by mound structures; they doubtless belonged to the later Indians. The former are usually single or in small groups, and the human remains found in them are generally so completely decayed, that they crumble to dust on being disturbed. In the neighborhood of Cincinnati many isolated collections of relics have been plowed up, which were evidently the remains of denuded mounds of this character.

Sometimes, however, mixed mounds—those containing the remains of both the mound-builders and the later Indians—were denuded in this way, especially when they were located on high hills where they were much exposed. To this class, I think, belongs the group of graves discovered in 1874, by Dr. H. H. Hill, on the point of Brighton hill, to the east of Mill Creek valley and overlooking the city from the northwest. This point was, until some thirty years ago,

covered with dense woods, and on it was a considerable collection of loose stones, in groups, so that it was supposed to be the remains of an old stone fort. When the trees were cut, many of these stones were hauled away. I can not hear of any exploration ever having been made of it, till the practiced eye of Dr. Hill recognized, in the artificial arrangement of the few stones left protruding from the ground, its true character. On turning some of the stones and digging around them, he found a few flint implements. He shortly afterward spent several days in making a thorough exploration of the locality, and found that the remains were distributed over a circular space of about forty feet in diameter, on the extreme point of the hill, with the ground sloping in every direction. The few human bones found were so much decayed that they crumbled to powder on exposure. Most of them were quite near the surface, but may have been covered four or five feet with the stones which had been taken away from the place. This, however, could not be definitely determined. Some appeared to have been buried in a sitting position, as the teeth were found near the thigh bones—these were evidently of the later Indians, as mound-builders' skeletons have seldom been found in that position.

Besides human teeth, a large number of teeth and tusks of various animals were found, with fragments of deer horns, bone awls, and bone awl-cases. The latter were made by splitting the lower leg bones of the elk or buffalo, scraping out the inside and straightening the edges, so that, when bound together, they formed a case. Some of them contained the bone awls, or

needles, when found, but all more or less broken. There were also pieces of mica, stone-hammers, and gorgets, three stone pipes, flint spear and arrow heads, some copper awls, fragments of shells, on one of which were traces of carving. These articles Dr. Hill has now on exhibition at the Centennial Exposition. The whole space where these remains were found was probably covered with a mound of earth, which the rains of centuries had washed away, leaving only the stone foundations. It is a bold point of the hills, fully exposed to the west, south, and east, and commanding an extensive view, one probably of a connected series of outlooks, or signal stations, which Judge Cox, who has made a careful enumeration of the mounds in this region, says can be traced up the Mill Creek valley, as well as up and down the Ohio to the Little and Big Miami rivers, and thence up their courses. There are several mounds also on the Kentucky hills opposite, which may have been connected with the same series.

It may be of interest here to examine these pre-historic works in the light of Lewis H. Morgan's "pueblo" theory, as set forth in his article in the *North American Review* for July of this year. The great central work, an ellipse eight hundred by six hundred and sixty feet, corresponds with his pueblo or village. Its position gave it a measure of security, being on the upper plain, three hundred and fifty feet from its edge, and could be completely screened from view from the river by a belt or grove of trees. The embankment, three feet high (possibly originally higher) with a base of thirty feet, afforded sufficient foundation for their buildings, occupying the circumference of the ellipse,



facing inward, presenting a solid timber wall on the outside, with no entrance but by the gateway on the east, which may have been protected by a palisade of round timber, with proper openings for ingress and egress, and by some structures of the nature of block-houses on the higher embankments attached externally at each side of the entrance. From the lower of these block-houses, it will be remembered, ran the low embankment, one foot high with nine feet base, southward nearly to the edge of the declivity, and then east to the mound on corner of Third and Main streets. This may have been occupied by a high timber palisade, or a covered-way leading to the mound, which was so situated as to command a full view of the Licking river, which enters the Ohio on the opposite shore, and was doubtless an important approach, which it was necessary should be watched. If I am right in supposing that the embankment, of the same dimensions as the last, noticed east of Sycamore street, running from Sixth street to near Third street, turned there and joined the other embankment at the mound, and was built upon in the same manner, we would thus have the whole front so defended that it would have to be forced or flanked by any enemy coming from the direction of the Licking river.

East of this the high hill, Mount Adams, overlooking the Ohio, and giving a clear view up the river for miles, would be a natural outpost on which it would not be necessary to erect a mound structure. I have never heard of any remains having been found on this hill.

To the west, the hill next the river was too distant, and from its position did not command an extensive enough view of the river, to serve as an outlook, so a

position was selected near the edge of the plain, about five hundred yards west of the closed end of the village, and a large mound thirty-five feet high was erected, from which could be had an extensive view of the Kentucky shore and of the Ohio river to the bend below the mouth of Mill Creek. The Brighton Hill mound would give an extensive view of the whole of Mill Creek valley. The whole, as before mentioned, being part of an extensive series of signal stations.

The minor mounds and other works on the upper plain may have been connected with the supervision and care of their agricultural operations on the rich land between the village and the northern hills.

Thus we have a village judiciously located on a fine fertile plain, and well guarded by the nature of the location, and the artificial works erected on a carefully arranged plan.

Mr. Morgan's theory will apply to a large number of the Ohio works. In one particular, however, I think the facts will not support him (and it is not essential to the validity of the theory); that is, his supposition that the outside of the pueblos, or buildings, was covered with a thick layer of plastic clay mixed with gravel. I believe I am correct in saying that there is no clay in Ohio which could be applied in this way, and resist for any length of time the washing rains and sudden winter changes of temperature of our climate. If they had such a tenacious clay, as for instance that found in southern Colorado, which alone would answer for such a purpose, there would have been no necessity for them to change their mode of building—they would still have continued to make their adobes, and have erected dwellings

similar to those they had been accustomed to. Nor do I think that there are at any of the embankments scattered through Ohio any vestige of such a deposit at the surface, as would result from the destruction or decomposition of buildings thickly covered with clay and gravel, as there would have been had such a covering been in use. It seems more probable that timber alone was used in their buildings and fortifications.

But, to return from this digression, the two larger mounds were so situated that we can hardly avoid the conclusion, though it is only a supposition, that one object of their erection was to serve as outlooks for watching the approaches to their village from the Kentucky side of the river by the Licking, and from the west by the Ohio. From the description of the structure of the mounds and the remains found in them, it is quite certain that they were also grave-mounds. They may have been originally placed on these commanding points so as to be seen from a distance (just as we place monuments in prominent positions), and afterward used as outlooks. Dr. Drake, as quoted above, gives sufficient details of the structure and contents of that at the corner of Third and Main streets to warrant this conclusion as to that mound. The larger one, on Fifth and Mound streets, was entered in his time, and some human remains found. Afterward it was partially cut away on the southern side, perhaps at the opening of Fifth street, and was almost entirely demolished in the fall of 1841, on the opening of Mound street and the alley running west from it. The work was commenced at the top, the earth being thrown down until it was not more than eight or ten feet high, when it was dug down

perpendicularly and the material carted off. Several skeletons, in good state of preservation, were found near the surface, evident depositions of the later Indians, and with them stone axes, arrow-heads, mica, etc. The principal grave, however, that for which the mound was commenced, was found nearly on a level with the original surface, and contained a much decayed skeleton, of which a portion of the skull is still in the possession of Mr. Gest, who was the owner of part of the ground on which the mound stood. Under this skull was found the stone known as the "Cincinnati Tablet," with two polished, pointed bones about seven inches long, charcoal, and ashes.

This stone, as I will show hereafter, immediately excited a good deal of interest and attention. A few weeks after it was found, it was exhibited at a meeting of the Western Academy of Natural Sciences (December 7th, 1841), and John P. Foote was appointed a committee to report on it. At the next meeting (December 14) he made a report, the minute of which is thus entered on the records of the society :

"A paper was read from the committee to which the curious Indian relic was referred. The reporter appears to think that the relic possesses internal evidence of its genuineness, and there is no doubt that it was really disinterred from the mound, by whomsoever deposited."

In the *Cincinnati Gazette*, of December 12, 1842, an engraved representation of the stone appeared, with a communication from Mr. Gest, the owner, and some comments by the editor, occupying over a column of the paper. These were of no special value, being spec-

ulations as to its use, etc., but it was a public declaration of its genuineness.

It was next described and figured by John S. Williams, in the *American Pioneer* of May 1843, an antiquarian and historical magazine of some note, commenced at Chillicothe the previous year, but removed to Cincinnati and published there in 1843.

Mr. E. G. Squier, an acknowledged authority in archæological matters, next described and figured it in the *Transactions of the American Ethnological Society* (Vol. 2, pp. 197-199), in an article on the Aboriginal Monuments of the Mississippi Valley. He says:

“The circumstances under which this relic was discovered are such as to leave little doubt of its authenticity, or that it pertained to the race of the mounds.”

Mr. Squier had a most intimate knowledge of such remains, and was not likely to be deceived. In the same article he devotes eight pages to a searching investigation of the celebrated Grave Creek stone, fully exposing it as an imposition.

Mr. Squier, the same year, 1848, repeats his description and comments on the “Cincinnati Tablet,” as given in the *Transactions*, in the joint work by himself and Mr. E. H. Davis, *The Ancient Monuments of the Mississippi Valley*, the first volume of the *Smithsonian Contributions to Knowledge*. I can not convey a better idea of the tablet than by quoting his description and comments in full, as follows:

“The material is a fine-grained, compact sandstone, of a light brown color. It measures five inches in length, three in breadth at the ends, and two and six-tenths at the middle, and is about half an inch in thickness. The sculptured face varies very slightly

from a perfect plane. The figures are cut in low relief (the lines being not more than one-twentieth of an inch in depth), and occupy a rectangular space four inches and two-tenths long, by two and one-tenth wide. The sides of the stone, it will be observed, are slightly concave. Right lines are drawn across the face, near the ends, at right angles and exterior to these are notches, twenty-five at one end, and twenty-four at the other. Extending diagonally inward are fifteen longer lines, eight at one end and seven at the other. The back of the stone has three deep, longitudinal grooves, and several depressions, evidently caused by rubbing—probably produced by sharpening the instrument used in the sculpture.

“Without discussing the ‘singular resemblance which the relic bears to the Egyptian *cartouch*,’ it will be sufficient to direct attention to the reduplication of the figures, those upon one side corresponding with those upon the other, and the two central ones being also alike. It will be observed that there are but three scrolls or figures—four of one description and two of each of the others. Probably no serious discussion of the question, whether or not these figures are hieroglyphical, is needed. They more resemble the stalk and flowers of a plant than any thing else in nature. What significance, if any, may attach to the peculiar markings or graduations at the ends, it is not undertaken to say. The sum of the products of the longer and shorter lines ( $24 \times 7 + 25 \times 8$ ) is 368, three more than the number of days in the year; from which circumstance the suggestion has been advanced that the tablet had an astronomical origin, and constituted some sort of a calendar.

“We may perhaps find the key to its purposes in a very humble but not, therefore, less interesting class of Southern remains. Both in Mexico and in the mounds of Mississippi, have been found *stamps* of burned clay, the faces of which are covered with figures, fanciful or imitative, all in low relief, like the face of a stereotype plate. These were used in impressing ornaments upon the clothes or prepared skins of the people possessing them. They exhibit the concavity of the sides to be observed in the relic in question—intended, doubtless, for greater convenience in holding and using it—as also a similar reduplication of the



ornamental figures, all betraying a common purpose. This explanation is offered hypothetically as being entirely consistent with the general character of the mound-remains; which, taken together, do not warrant us in looking for any thing that might not well pertain to a very simple, not to say rude, people."

Here, then, we have a mound-relic, examined and reported on by a scientific society immediately after it was found; described and figured in a local newspaper and in a popular magazine shortly afterward; in the transactions of a learned society, and in the first publication of the Smithsonian Institution, a few years subsequently by one of the highest archæological authorities in this country—all agreeing in considering it a genuine relic of the mound-builders. No doubt is cast upon it for thirty years, and then by a gentleman of some scientific reputation, who was living in Cincinnati when it was found; knew of the publications in the *Cincinnati Gazette* and *American Pioneer*, which he mentions in his statement, and must have known the opinion of Mr. Squier, as published in 1848, yet he never attempts to deny its genuineness for thirty years; and when, in 1871, he does do it, it is in so peculiarly an unscientific manner, that it was only accidentally brought to light and published.

The statement he makes appears in *Historical and Archæological Tract* number nine, of the Western Reserve Historical Society, published at Cleveland, Ohio, in February, 1872. This tract is entitled, *Archæological Frauds—Inscriptions attributed to the mound-builders—Three remarkable Forgeries. By Col. Chas. Whittlesey.* The "three remarkable forgeries" are the Grave Creek Stone, the Cincinnati Tablet, and the Holy Stone of

Newark. Of the first, he quotes the opinion of Henry R. Colcraft (Schoolcraft), of Mr. Tomlinson, the owner of the mound, and some remarks by a Mr. Levering in the *American Pioneer*, and then dismisses it with the remark that "this stone, thus verified and commented upon with so much learning, is now universally regarded by archæologists as a fraud." He gives no reason, and gives no credit to Mr. Squier, who twenty-four years previously had fully exposed it.

As to the "Cincinnati Tablet," he quotes from the article in the *Gazette*, and from the description and comments of Dr. Daniel Wilson, in the first edition of his *Pre-historic Man* (London, 1865,) and then continues as follows:

' Thus for nearly thirty years this ornamented stone was received as genuine, though its hieroglyphic character was not generally admitted. All illusions and all speculations on this relic are now dissipated. Recently, looking over Professor Wilson's work in our library, I perceived a written leaf pasted into the book, at the place where it is noticed by the author, which proved to be the following statement. It wipes out the last supposed record of the race of the mounds.

"*Comments of Dr. Jared P. Kirtland, Cleveland, Ohio, December, 1871, on figure 17, page 221, Wilson's Pre-historic Man—Cincinnati Tablet:*

"' In early days, a high and regularly formed mound was located in the western part of Cincinnati. General Wilkinson, at an early time, placed upon it an observatory and sentries for watching the Indians. In the year 1841, the corporation established a street through this mound, and its destruction rapidly progressed.

"' One morning while I was in the chemical laboratory of my colleague in the Ohio Geological Survey, and in the Medical College of Ohio, Professor John Locke, in the spring of that year, an artful and sinister looking man rushed into the room, and assuming a high degree of excitement, stated that while excavating

the center of the mound, he had dug out a curiously engraved stone, which he could sell to us for \$40 or \$50, and handed out the tablet figured on page 221. Prof. Locke took it, and calmly examined the engraving through a magnifier. He, in a sarcastic manner, said to the stranger, "I would advise you, before you attempt to palm this off as a piece of antiquity, to carefully brush from the excavations in the stone, the fine grains of sand formed by the cutting instrument." I then examined it in a similar manner, and plainly detected the imposition. The fellow hastily seized the stone, and made his exit without reply.'

"The next year, a figure and description of this stone appeared in the *American Pioneer*.

"I afterward learned that this stone was cut and engraved in a marble shop in that city, and was carefully buried the night previous in the mound, where it would be reached by the excavators in the next day's labors.

"J. P. KIRTLAND."

This was certainly rather a singular method for a scientific man to expose, as a fraud, a relic which for thirty years had been regarded by all archæologists as genuine—to write such a statement, paste it in a book in a society library, and put it back on its shelf, without calling any attention to it, leaving it to be accidentally discovered by his friend Colonel Whittlesey, the president of the society. Why did he not expose it years before? And when he did write out his statement, why did he not give it at once to the Society, to be laid before the public in one of their tracts?

Believing this stone to be genuine, notwithstanding Dr. Kirtland's statement, I have taken some pains to collect all the evidence in its favor, and, even at this distant day, have succeeded beyond my expectations. I propose to show particularly that Prof. John Locke could not have been present at any such interview as

detailed by Dr. Kirtland, and if any such interview occurred, it must have been some other stone which was offered; certainly not this one.

Here is the statement of Mr. J. L. Wayne, a gentleman well known in Cincinnati, who took the stone from its position in the mound:

“When I was a boy I was much interested in what were commonly called Indian relics, and have only been prevented from indulging my tastes in that direction by the unyielding demands of my business.

“From my earliest remembrance until the year 1841, there stood between Fifth and Sixth streets, in this city, a mound which was removed during that year for the purpose of opening and grading Mound street. I frequently passed the mound on business for my father, before and during its removal. I was present at the time the one grave, which it contained, was opened. When I first reached the mound, on that day, I was going on one of these errands. The earth had been irregularly removed from the top of the mound to within say ten feet from the level of the street, and then cut quite regularly perpendicularly from the east side. The workmen were digging carefully, or, more properly, shaving off the side with shovels, as if they had been ordered to be cautious, occasionally using the pick to loosen. I saw that they were near the center of the mound, say five feet away, and made up my mind that if there were any aboriginal remains in the mound, they would soon reach them. I accordingly ran as fast as possible to the corner of Fifth and Mill streets, where my errand called me, and back again to the mound. When I reached it the workmen were considerably nearer the center, and still digging with care. I placed myself among them, though warned away, and so continued until the grave was reached near an hour afterward. The first warning that any thing different from the earth they were removing was reached, was caused by the shovel failing to shave the earth away without greater effort. When the shovel broke through what proved to be the shell of a cavity, the hardened crust fell away in pieces, not crumbling, from the side

nearest us, leaving the other side and top intact. The cavity was about two feet three or four inches in its highest part, about the same breadth, and somewhat shorter than the average height of men of our day. Its floor was about four and a half, perhaps a trifle less, from the level of the street. Longitudinally it lay nearly north and south. I remember distinctly the appearance of the earth surrounding the grave at the time. It was compact and coherent, and had that look that the side of a loam-bank presents, and showed no traces of having been tampered with. It would have been impossible to introduce anything into the grave without disturbing the earth and breaking the crust. The workmen had no chance to place anything in the grave, as I hardly waited for the crust to fall away before my hand was groping among the charred material it contained. The first article I raised was a skull, which broke in several pieces, and was at once taken from me by the workmen, except one piece which I managed to get into my pocket. They gathered round the skull, and I then inserted my hand into the place left vacant by it, and beneath where the back part had been, as if the skull rested on it, I found a carved or engraved stone, from which I removed the earth on one side and the charred matter on the other, and was examining it, when some one whom I did not know, took the stone from me, with a promise of its return as soon as he had examined it. While waiting for him to return it, Mr. Gest, whom I had known from the fact that an uncle of mine and he were acquaintances, came upon the ground, and the stone was handed to him. Perceiving, after waiting some time, that there was no likelihood of his returning it, I went back to the grave and again removed some of the contents, and found some small pieces of bone, of what part of the frame I did not know, nor if human. I preserved them and the piece of the skull for many years, but, through frequent change of residence, they have been lost or mislaid.

“J. L. WAYNE, JR.

“CINCINNATI, *June* 19, 1876.”

Mr. Wayne's father adds this note :

“I remember very distinctly most of the facts as related above by my son, J. L. Wayne, Jr. It was impressed upon my mind

from the fact that he felt very much grieved because the stone was taken from him, he thinking he was the rightful owner.

“J. L. WAYNE.

“CINCINNATI, *June* 19, 1876.”

Mr. Erasmus Gest makes the following statement :

“The ‘Cincinnati Tablet’ was found in a large mound at Cincinnati, Ohio, located where the alley between Fifth and Longworth streets now intersects the west side of Mound street. It was, as near as can be remembered, about twenty-five feet high, with a base of seventy-five feet in diameter. It was removed in 1841, in order to grade the street and alley. It was composed entirely of surface alluvial of the vicinity. Near the center and base of the mound were found this engraved stone, the major part of a human skull, and two bones, probably seven inches long, pointed at one end. At the place of deposit there were unmistakable marks of fire.

“These relics, immediately after they were found, came into my possession. I was then an amateur collector of Indian relics, and then, as now, interested in every thing pertaining to the pre-historic races. As I was the owner of one of the lots on which the mound stood, and my father was then city engineer, under whose direction the work of removal was done, I closely watched the progress of the work. I was not present when the tablet was found, but arrived soon afterward, when I took possession of it, and it has been my property ever since, though I deposited it for many years in the collection of the Western Academy of Natural Sciences.

“The appearance of the earth around the resting-place of the tablet, the position of the bones, skull, charcoal, etc., as seen by myself, and described to me at the time by others, showed conclusively that neither the ground nor any of the above-named articles had been disturbed previous to their removal, and that the articles were found just as they had been placed at the time the mound was erected.

“I showed the stone immediately to Joseph Clark, Dr. John Locke, John P. Foote, and others interested in such remains, and



exhibited it at several meetings of the Western Academy of Natural Sciences.

"It became the subject of much discussion and speculation among the members, but I never heard its genuineness doubted then, nor since, till my attention was called to the 'comments' of Dr. J. P. Kirtland, as published by Colonel Charles Whittlesey, which I saw and read only a few days ago, though I had previously heard of them. So far from disbelieving in the genuineness of the tablet, Dr. Locke, with whom I was well acquainted, took a special interest in it. He asked the privilege of making a mold of it, and I willingly loaned it to him for that purpose. He made quite a number of casts, colored them, and distributed them among those of his friends who were interested in such matters.

"ERASMUS GEST.

"CINCINNATI, OHIO, *May 28, 1876.*"

Mr. Robert Buchanan, who was President of the Western Academy of Natural Sciences at the time, and present at the meetings of December 7 and 14, 1841, at which the tablet was exhibited and reported on, writes as follows:

"I was one of the original members of the Western Academy of Natural Sciences at the time of its organization, in 1835, and continued connected with it till it was merged into the present Cincinnati Society of Natural History. Dr. John Locke was also an active and prominent member of the Academy in its early years.

"I was absent from the city, on a visit to my old home in Pennsylvania, at the time the stone known as the 'Cincinnati Tablet' was found, but saw it shortly after my return, and it formed for some time a frequent topic of conversation at our meetings, it being considered a unique and valuable relic of the mound-builders, and many were our speculations as to its origin and use.

"Dr. Locke was quite a mechanical genius, and was very fond of making plaster casts of any rare fossils, etc., which were brought before the Academy. He made a mold of the tablet, and gave casts to some of his fellow members and others. In all

the many conversations we had about the tablet, I never heard its genuineness doubted or disputed by Dr. Locke or any one else ; we all believed it a true relic of the mound-builders.

“ R. BUCHANAN.

“ CINCINNATI, OHIO, *June 16, 1876.*”

Mr. S. T. Carley, another member of the Academy, writes :

“ I am very glad you have undertaken to establish the genuineness of the Fifth street mound tablet, of which I think there is no good reason to doubt. I was present when it was before the Academy ; it was an object of unusual interest, and was examined particularly with reference to its genuineness as an Indian relic. It had no appearance of being a recent production ; no tool mark ; no smooth surface on face or figures, but the entire surface had a slightly roughened appearance, as from the effect of time. The figures, intended to match, though of the same pattern, were unlike in size and proportion in all their parts, and bore evidence, as Mr. Foote stated in a subsequent report, that they were not made by any tool now in use.”

Mr. George Graham, Vice-President of the Academy, who was also present at the meetings referred to, says :

“ I recollect the mound as early as 1823 or 1824, and saw it frequently from that time till 1841, when the remaining earth was removed for the purpose of opening Mound street. During the process of removal, I collected occasionally human bones, skulls, charcoal, broken shells, and specimens of pottery. I recollect when the tablet was found, which I think was discovered about the middle of the work, or when about half of the earth was removed. Mr. Joseph Gest at that time was engineer of the city, and had supervision of the grading of the streets, his son Erasmus being his assistant, and became the owner of the relic. The specimen was well known to the members of the Academy, and a report on the relic was made by Mr. John P. Foote. I never heard any doubt expressed by any person of the genuine char-

acter of the relic, and every one familiar with its history appeared to be perfectly satisfied that the specimen was made by the same persons who erected the mound.

“Dr. Locke was enthusiastic in collecting and describing the fossils, botanical specimens, and minerals of the West, and would criticize closely any new object of interest. If the mound relic had been an imposition, he would not have allowed it to be exhibited as genuine, without expressing his opinion to those who were his intimate associates.”

From these statements, made by gentlemen of scientific attainments and well known integrity, we must conclude that Dr. John Locke could not have been a party to an interview such as described by Dr. Kirtland, at which *this* stone was presented. If he gives the date of the interview correctly, the spring of 1841, it could not be this stone, as it was not found till November of that year, and then in such a manner as to entirely preclude the idea that it had been manufactured and introduced into the mound, as he supposed it to have been. After a lapse of thirty years, he doubtless confounded this stone with some other which was offered for sale.

Dr. Locke, whom I knew very well, was a man of rigid truthfulness, and had an impatient contempt and hatred of imposture or fraud, especially if it were of a scientific nature. Living at Cincinnati and keeping up with the current scientific thought, he could not have missed seeing the public statements with regard to this tablet, and, as we are credibly informed, made casts of it for distribution among his friends. Had he believed it to be a fraud, he would have been the last man to disseminate a knowledge of the tablet by means of casts, and the first man instantly and constantly to denounce it, not only to his associates, but in print whenever any

one dared to have mentioned it as genuine. Especially would he not have let pass unchallenged Mr. Squier's record of it in the first volume of the Smithsonian Contributions, with which he was undoubtedly acquainted, for he kept up his interest in all scientific matters to the time of his death, in 1856, eight years after the publication of that volume.

The tablet is so unique, so different in its conception and execution from any modern work, and yet bearing a certain generic resemblance to some of the remains of the earlier races on this continent, that it is almost impossible that it could have been produced even by an "artful and sinister-looking man" in a "marble shop;" or that it could have been made by an ordinary day-laborer, and deposited by him in the mound over-night, with the risk of losing the benefit of all his labor by having it found by one of his fellow-workmen, or claimed at once by the owner of the property, as this tablet was. If we accept the testimony of Messrs. Wayne and Gest as to the manner in which this tablet was found, it is impossible that it could have been made and offered for sale, as Dr. Kirtland asserts.

Mr. Squier calls attention to the reduplication of figures in the carved work on the tablet. The same reduplication exists on a stone found in 1870 in a mound near Lafayette bayou in Issaquena county, Mississippi, and now in the possession of W. Marshall Anderson, of Circleville, Ohio. This stone\* is of similar material to the Cincinnati tablet, a fine-grained

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\*A wood-cut of this stone will be found in the third edition of Dr. Wilson's *Pre-Historic Man*, vol. 1, page 318.

sand-stone. It is circular, eight and a half inches in diameter, and about an inch thick, with a smooth, slightly convex surface, which is covered with regular carved figures in low relief. The chief objects represented are two bird-headed serpents, carved round the central portion of the stone, the tail of each coming in behind the head of the other—each with the markings around it, being evidently intended as a counterpart of the other. As in the Cincinnati tablet, however, the workman has failed to make them exactly duplicates. One of the serpents has three rattles to his tail, the other four, and there are other minor differences. On the back is a circle, cut about half an inch from the edge, and exterior to it the circumference is divided by fifteen arcs, and from their intersections are notches dividing the side of the stone into fifteen sections. It may be noted, that the number of these arcs and sections correspond with the number of oblique lines on the two ends of the Cincinnati tablet. In the centre is a mortice-hole, where a handle had been attached to it, or it had been fixed on a pedestal. No one, I think, seeing these two stones together, could avoid the conclusion that they were made by the same race, though found so far apart, and that neither of them are modern impositions.

I have already given Mr. Squier's observations on the character of this tablet, and will close with an extract from Dr. Daniel Wilson's *Pre-Historic Man* [third edition, 1876, vol. 1, page 274-5,] with reference to it:

“But the most remarkable feature of its graven device is the series of lines by which the plain surface at each end is divided. The ends of the stone, it will be observed, form arcs of circles of

different dimensions. The greater arc is divided by a series of lines, twenty-seven in number, into equal spaces, and within this is another series of seven oblique lines. The lesser arc at the opposite end is divided, in like manner, by two series of twenty-five, and eight lines, similarly arranged. This tablet has not failed to receive due attention. It has been noted that it bears a 'singular resemblance to the Egyptian cartouche.' Its series of lines were discovered to yield, in some of the products of the longer and shorter ones, a near approximation to the number of days of the year. An astronomical origin was accordingly assigned to it, and it has been surmised to be an ancient calendar, recording the approximation of the mound-builders to the true length of the solar year. Mr. Squier perhaps ran to an opposite extreme in suggesting that it is nothing more than a stamp, of which specimens have been found made of clay, both in Mexico and the Mississippi mounds, and which were probably used in impressing ornamental patterns on cloth or prepared skins. Such clay stamps always betray their purpose by the handle attached to them, as in the corresponding bronze stamps, common on Roman sites; whereas the Cincinnati tablet is about half an inch in thickness, with no means of holding or using it as a stamp, and bears on its unfinished reverse grooves apparently made in sharpening the tools by which it was engraved. But whatever theory be adopted as to its original object or destination, the series of lines on its two ends have justly attracted attention, for they constitute no part of the device, and can scarcely be regarded as an ornamental border. Possibly in them we have a record of certain scales of measurement in use by the mound-builders; and if so, the discovery is calculated to add fresh interest to our study of the geometrical structures, which, far more than their great mounds, are the true characteristics of that mysterious people."

He then adds the following in a note:

"Mr. Whittlesey has included this tablet among his "Archæological Frauds," but the result of inquiries made by me during a recent visit to Cincinnati, has removed from my mind any doubt of its genuineness."





THE CINCINATI TABLET.





*Archæology of Missouri.*

By A. J. CONANT, A.M.

There is, doubtless, now no richer field for archæological research in this great basin of the Mississippi Valley than is to be found in the State of Missouri. The wonderful extent and variety of the ancient works and monuments therein, the relics they disclose, the huge burial mounds filled with the bones of the dead, disposed in orderly array, as though by loving hands, along with vessels of pottery of graceful forms and varied patterns, often, too, skillfully ornamented,—all bear witness to a settled and permanent condition of society and government and obedience to law, and to certain convictions of a future life. Mounds are found almost everywhere throughout the length and breadth of the State.

The largest tumuli and most extensive works are seen upon the river terraces of the Mississippi and its tributary streams. Here were the large towns and populous centres, seats of government, and doubtless, too, where the national solemnities of their worship were celebrated. The truncated, oblong mounds, with a graded way leading to a higher elevation at one end, are so like the pattern of the Teocalli of Mexico, as to compel the conviction that their purpose was the same, and that from these, too, ascended the smoke of the sacrificial altars in the worship of the heavenly bodies. In the centre of the enclosures rise the commanding residence sites of the dwellings of their chiefs, and grouped around them were similar structures of less notable character. It is interesting to note, also, that the dead were not carried to some distant, isolated spot for interment, but in the very heart of the town, where the homes were the thickest, the last resting-place—the burial mound—was erected.

In many places, the streets of the cities may be traced. The sites of the long rows of dwellings, built of such perishable material that no vestige now remains, may be identified by the constant presence of the family hearth, showing by its reddish, baked appearance, to the depth of several inches, the long continued action of fire.

But not in works like these alone are to be found the evidences of an ancient and vast population. Within the State, from Pu-

laski Co. to Arkansas, in all the little valleys which wind in and out among the flint-crowned hills of the Ozarks, are seen what may be termed garden mounds. These are elevated about two or three feet above the natural surface of the land, and are from fifteen to fifty feet in diameter, varying thus in size according to the amount of richer soil which could be scraped together. Their presence may always be detected in fields of growing grain by its more luxuriant growth and deeper green.

These Ozark mountains have preserved their treasures well, and demand of the archæologist serious examination and careful study. These hills are honeycombed with caves, many of them of unknown extent. Their openings may be seen in the precipitous bluffs along the Gasconade river, in great numbers, on either side, or the majestic arches of their openings span the divides where the smaller hill ranges meet. Do these numerous caves and channels evidence an ancient system of drainage, in operation long before the Gasconade had asserted its "right of way" and scooped for itself a course, and the rocks had melted away before its ceaseless flow?\*

In these caves the ancient dead were buried and the funeral feasts were celebrated. The deep deposit of rich nitrogenous earth in the larger chambers, and the bones of various animals, birds, and mussel shells—the refuse of the funeral feasts,—the alternate layers of ashes and charcoal mingled with earthy matter, containing human bones in different degrees of preservation, tell of oft-repeated visits and recurrence of the funeral rites. Here, too, are found the mounds of stone, the largest on the highest and most inaccessible elevations, and always where the prospect is most delightful and commanding. Sometimes they are ranged in continuous lines from the brow of the precipitous escarpment hundreds of feet in height, along the barren ridges. Sometimes they stand alone on the hillside which overlooks some pleasant valley. Who built them? Did the red man? Possibly. But it was no child's play to climb up the mountain side carrying those great stones, some of which might trouble a strong man to move far from their place, and deposit them together until the heap should cover a space thirty feet in diameter, with an elevation of five or six feet. Of what was deposited there with such labor, nothing

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\* See Sir Chas. Lyell's remarks upon the Valley of the Meuse, "Antiquity of Man," p. 73.

now remains, as far as is at present known, but a few human teeth and fragments of bone. No one who has seen and studied these ancient remains, thus briefly alluded to, will consider the statement extravagant, that they furnish convincing evidence that Missouri was once inhabited by a population so numerous, that, in comparison, its present occupants are only as the scattered pioneers of a newly settled country. But who they were, what was their origin, what became of them, may perhaps never be known. Still it seems possible, and probable even, that the ancient monuments of Missouri which are yet undisturbed, if examined seriously and thoroughly by those well qualified for the work, may yet disclose some facts, and furnish some records, which will throw light upon these dark questions. Leaving for a future occasion the consideration of many interesting facts concerning the habits and manners of life of these vanished peoples, and such discussions as might properly engage our attention in this connection, the remaining space allotted to this paper will be occupied with the description of the remains of a city situated upon the banks of Bayou St. John, in Southeast Missouri.

This Bayou, as near as could be ascertained, is about seventy-five miles long, finding its outlet into the Mississippi near the town of New Madrid, about eighteen miles from which place the works examined are located. At this point the bayou is one and a half miles wide. The interesting works found here consist of enclosures, large and small mounds in great numbers, as well as countless residence sites of the ancient inhabitants. A description of a single group will give the general characteristics of all in that region. Upon the western bank of this bayou, which (it should be stated) is a dense cypress swamp, the works under consideration are found. From the level of the bayou to the prairie land above, the ascent is by a gradual slope to a vertical height of fifteen feet. Upon this belt of sloping ground, now covered with a heavy growth of timber, the works are most numerous; while from its edge, westward, the level prairie (that is, the alluvial plain of the Mississippi) has been under cultivation for sixty or seventy years. Here, including forty acres of the cultivated field and ten of the sloping timber belt, is an area of about fifty acres, enclosed by earthen walls which may be distinctly traced for several hundred feet, but gradually disappear on the western side, having been nearly obliterated by the long cultivation of the



field. Where it is best preserved in the timbered land, its height was found to be from three to five feet, and fifteen feet wide at the base.\* In the centre of the western side of the enclosure and close to the wall, as near as could be judged, is a mound of oblong shape, three hundred feet in length at the base, and at its northern end one hundred feet wide, and twenty feet high at the present time. The top of it slopes gradually to the south, and although the plow has passed up and down its sides for sixty years, still on its eastern side may be distinctly seen the evidences of a graded way to its summit, which marks it as a temple mound. Close to its northeastern side, where the mound is widest, is a deep depression in the field, about ten feet in diameter. Mr. Wm. M. Murphy, a farmer who has long resided in the neighborhood, told me that when he first saw it he could not get in and out of it without a ladder, and that it had since been nearly filled up by the tillers of the soil with stumps, logs and earth. It is conjectured to have been a well. The wells of this region are usually sunk to the depth of twenty-five feet. In the centre of the enclosure stands a circular mound seventy-five feet in diameter, and also twenty feet high, which upon examination disclosed nothing but broken pottery. It belongs to that class usually termed residence mounds. The view from its summit towards the west and south commands a prospect several miles in extent; on the north the view is cut off by a heavy growth of timber, and on the east by the cypress swamp. In a direct line with the two mounds thus described, partly upon the edge of the cultivated field and partly upon the declivity which descends towards the swamp, in the midst of a large group of smaller works, stands a large burial mound, about fifteen feet high and one hundred feet in diameter. Its original height could only be conjectured, as it has long been occupied as a residence site by the present inhabitants. The ruins of a log house are still standing upon its summit. It has been the sepulchre of many hundreds, perhaps a thousand individuals. The manner of interment, as far as my own observations extended, was to place the corpse upon the back with the head towards the centre of the mound. The number of articles of pottery

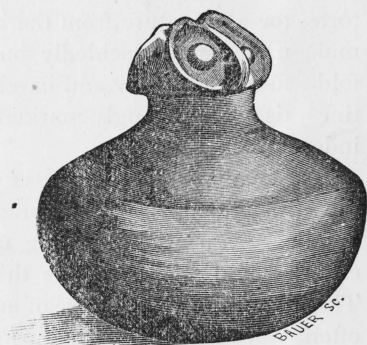
\* It will readily be perceived that absolute accuracy of measurement would be impossible, where the ground has been so much disturbed by cultivation. In the dimensions stated above, and those which follow, the figures given above are as close estimates as was possible under the circumstances to make.



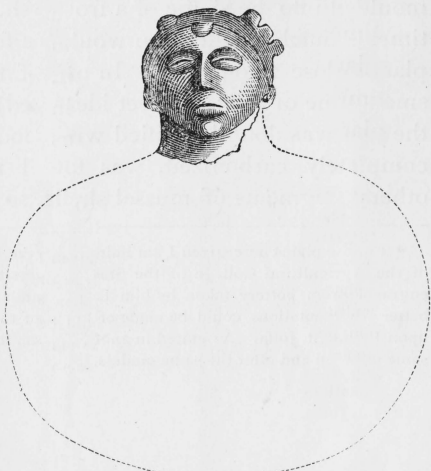
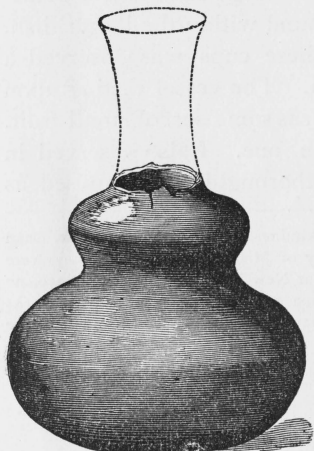
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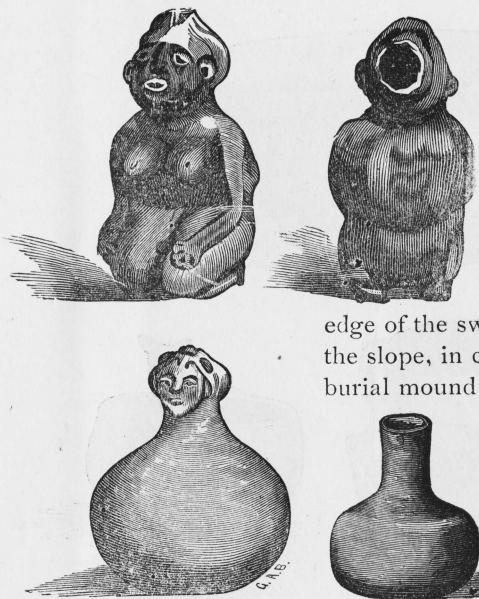
LARGE DRINKING VESSELS.

which have been taken from this mound, from time to time, it is impossible to compute. Many of them are now scattered among the cabinets of curiosity collectors, many hundreds I myself have counted, while the ground is strewn with the fragments of those destroyed by careless excavators. Three vessels of this ware were usually found deposited with each individual.\* A gourd-shaped jug with a long neck, holding from half a pint to two quarts, was placed close to and by the side of the head; on the other side would be found a smaller jug or drinking vessel, with the mouths of both sorts often moulded into the form of the head of some bird: the owl seems to have been a favorite model. Not infrequently the whole figure of the bird or animal, or of the female form, would be rudely represented. In the latter case, while the maker seemed not to be deficient, to some degree, in the knowledge of anatomy of the human form, and has suggested the spinal column with considerable accuracy, it is always distorted by a curvature from the base of the neck outward, so as to make the figure decidedly humpbacked; the lower limbs are folded under the body and barely suggested, while the sexual distinctions are so strongly marked as to render the object sometimes indecent.

As already noted, the corpse was placed lying upon the back, the arms folded across the breast. In the angle formed by the bend of the arm, and resting upon the arm and the side of the chest, would be found the third article of pottery mentioned. This had usually the shape of an ordinary pan with flaring sides; often, too, like a bowl, and as often again the vessel would be moulded into the shape of a frog, fish, or large clam shell; sometimes a much smaller cup would be found within the larger dish, placed close to one side. In one of these cups was observed a small bone or relic (not yet identified). The vessel resting upon the arm was doubtless filled with food, as some sort of small fruit, completely carbonized, was found in one. I also observed in others fragments of mussel shells, so thoroughly decomposed as

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\* For the plates here given I am indebted to the kindness of Dr. G. C. Swallow, Dean of the Agricultural College of the State University of Missouri. Although they were engraved from pottery taken by him from mounds at New Madrid many years since, no better representations could be made of many of those recently exhumed from the works upon Bayou St. John. As stated in another place, they all seem to have been made of the same material and after the same models.

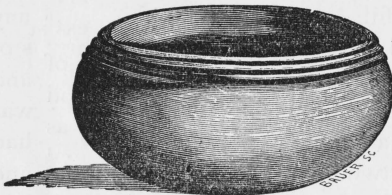
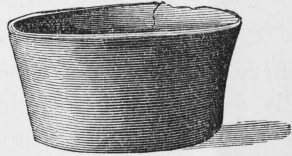
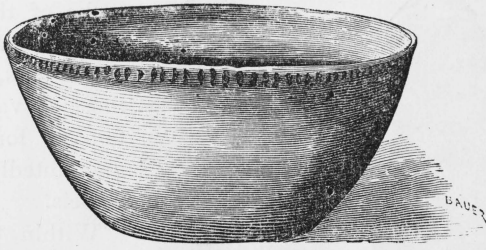


SMALL DRINKING VESSELS.

to be of the consistence of paste. The larger jugs, as well as those of various and fanciful forms, were undoubtedly drinking vessels.

Within the enclosure, from near the edge of the swamp, upon the side of the slope, in close proximity to the burial mound as well and extending quite a distance into the cultivated field, are great numbers of depressions in the soil from one to three feet in depth, and from

fifteen to thirty in diameter; sometimes in parallel rows, and usually about thirty feet from centre to centre. In many of these, forest trees of large size are still growing, and others equally large are lying upon the ground in various stages of decay. Upon digging into them, in almost every shovelful of earth were found pieces of broken pottery; many of these fragments indicated vessels of large size which must have had a capacity of from ten to fifteen gallons. Upon joining these fragments together, the mouths or openings were found to vary from three to twelve inches in diameter. They were doubtless stationery receptacles of food or water, as they were so thin that it would hardly seem possible they could be moved, when filled, without breaking. In many of these depressions examined were found large rough masses of burnt clay, of the color of common brick, full of irregular and transverse holes, which seemed to indicate, that, before it was burned, the desired form of a chimney, fire-place, or oven, had been rudely made out, by intertwining sticks, twigs and grass, and the whole plastered inside and out with moist clay, to the thickness of several inches, and then burned until it became red and



FOOD VESSELS.

hard as the bricks now in use. At the depth of about two feet, at the bottom of all which were examined, what seemed to have been a fire-place was disclosed. The earth was also burned, so as to present the color and hardness of the fragments of brick, to the depth of several inches. Along with the broken pottery were found, quite often, fragments of sandstone of various sizes, the larger pieces with concave surfaces, and all showing that they had been used for polishing or sharpening purposes, especially the smaller pieces, which are covered with small grooves one-eighth of an inch deep across the whole length and width, and at various angles with each other, as though they had long been used for sharpening some small metallic instrument or graver's tool.

One other significant characteristic of these works remains to be noted. All along the shore of the bayou, in front of the enclosed works, small tongues of land have been carried into the water, of varying length and width, averaging perhaps thirty feet in length by ten to fifteen feet in width, and about the same distance apart, resembling, upon a small scale, the wharves of a sea-port town. The cypress trees grow very thickly in all the little bays thus formed, and the irregular, yet methodical, outline of the forest, winding in and out, close to the shore of these tongues of land, is so marked as to compel the conviction that they are of artificial origin: and further, that, when these works were inhabited, what is now a cypress swamp was then the channel of a river. And the idea is no novel or original one, that anciently the Mississippi poured its flood through this long bayou and formed the terraces upon which these works are found.

One mile south of this point, and about three hundred feet from the margin of the swamp, is a peculiar work which is worthy of notice. It may be described as an oval or egg-shaped excavation, one hundred and fifty feet long and in its largest diameter seventy-five feet wide and about six feet deep. It is surrounded by an embankment about eight feet high around its northern curve: on the southern end the wall is not over five feet high, in which is a narrow opening, and extending from it is a curved, elevated way to the swamp, into which the earth taken from the excavation seems to have been deposited, until a circular mound or wharf was raised about twenty feet in diameter and five feet high in the



centre. The same opening and elevated way is seen at the northern end, extending to the water. It is doubtless an unfinished work, but its purpose cannot be conjectured.

About eight miles, in a southeasterly direction, from the works upon Bayou St. John, upon what is known as West Lake, is an extensive group of works almost identical with those described above, differing chiefly in this, that they are covered throughout with a heavy growth of timber; and the residence sites are found covering a much larger space, and in prodigious numbers; while in the centre of the group is an open space of several acres which seems to have been made perfectly level, containing no elevations or depressions whatever

In conclusion, it should perhaps be stated that the works described thus at length are only clusters of a continuous line of works extending along the shores for many miles in close connection, and for the most part covered by dense forests, the growth of centuries.

#### POTTERY.

The pottery of this whole region, including several counties in Southeast Missouri, through all the varieties of form and ornamentation, is so similar, that it would seem as though it might all have been the product of one manufactory. The clay seems first to have been mixed with pounded shells, and the articles then subjected to various degrees of heat. Some of the largest pots were burned till they became red; the medium sizes are usually dark gray; while some of the animal forms are of a yellowish-drab, and seem to have been made of clay of much finer quality, and with a very smooth surface; which surface is also frequently ornamented with stripes of white and red lines, in circles, curves, and spirals—the red circles, enclosing white lines, crossing each other at right angles. In fact, the decorations in many instances are quite artistic, not only in the relation of curves and angles, but in the representation of animal forms as well, which are so true to nature that we may well believe, that, when the human face is attempted, the artist drew from models before him.

#### CRANIA.

The bones were so thoroughly decayed that very few could be saved, and none in a complete state of preservation. Still, the

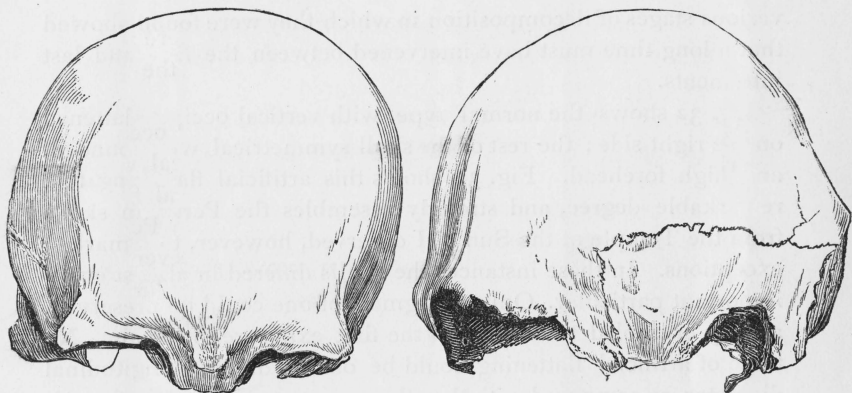


Fig. 32—FRONT AND SIDE VIEW.

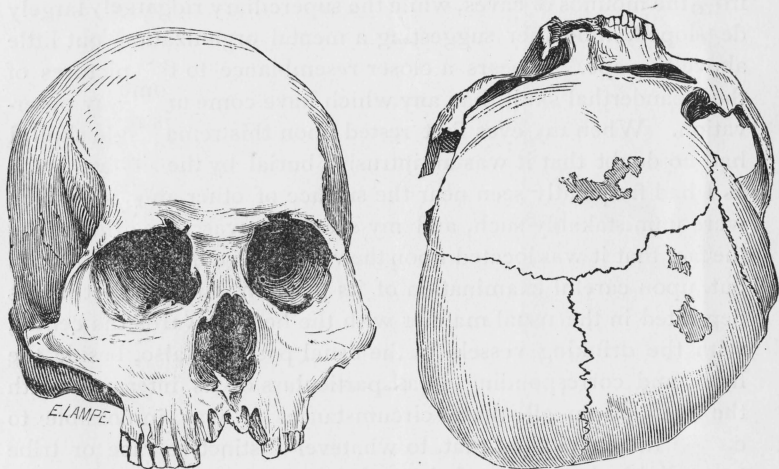


Fig. 33—FRONT AND VERTICAL VIEW.

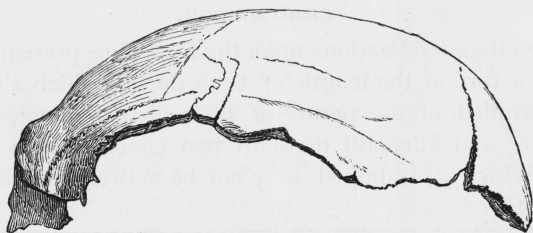


Fig. 34.

various stages of decomposition in which they were found showed that a long time must have intervened between the first and last interments.

Fig. 32 shows the normal type, with vertical occiput flattened on the right side; the rest of the skull symmetrical, well rounded, and high forehead. Fig. 33 shows this artificial flattening to a remarkable degree, and strongly resembles the Peruvian skulls from the Temple of the Sun.\* I observed, however, two marked exceptions. In these instances the skulls differed in almost every important particular. Only a fragment of one could be preserved, as they crumbled to dust upon the first exposure to the air. No trace of artificial flattening could be observed. Its longitudinal diameter, as compared with the others, was very great (see fig. 34). The forehead is lower and more retreating than any I have seen from the mounds or caves, while the superciliary ridges are largely developed, altogether suggesting a mental organization but little above the ape. It bears a closer resemblance to the pictures of the Neanderthal skull than any which have come under my observation. When my eyes first rested upon this remarkable skull, I had no doubt that it was an intrusive burial by the Indians, such as I had frequently seen near the surface of other mounds which were unmistakably such, and my suspicion was strengthened by the fact that it was located upon the very outer edge of the mound; but, upon careful examination of its position, I found that it was deposited in the usual manner with the head towards the centre, with the drinking vessels in the usual position, also, beside the head, and corresponding in all particulars of its interment with the rest. From all these circumstances it was impossible to escape the conviction, that, to whatever distinctive race or tribe the individual may have belonged, he was buried by those who erected the mound, and in the same faith.

#### CHRONOLOGY.

While all generalizations upon the facts here presented, with a view to ascertain the length of time during which these works were occupied, or the period of their abandonment, may seem premature and idle, still there are two considerations suggested thereby which it is hoped may not be entirely out of place or valueless.

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\* See Morton's *Crania Americana*, Plates B and C.

First, as to the different degrees of preservation of the skeletons. While all were so decayed that it was possible to secure only three or four skulls—the under jaw seldom or never complete—the bones were usually so far gone as to have no more consistency than the sand which covered them. In many instances, only a faint streak, or whitish line, in the earth, as successive sections were shaved down by the spade, would disclose the form of the head. And, again, the jugs and bowls, or pans, would be found in their relative positions, but no trace of the skeleton whatever! These facts prove, as remarked above, that many years must have intervened between the first and last interments.

Again, the high bank which marks the boundary of the bayou shows the long continued action of flowing water. To those who are acquainted with the habits of this capricious river, the statement that here was once the channel of the Mississippi, will cause no surprise. The town of New Madrid, eighteen miles away, is a moving town, and slowly retiring before its resistless encroachments. In 1804 its site was one mile farther east than now, and upon what is now the eastern shore. The towns and cities of the mound builders were almost always upon the banks of some river. If it be granted that this high terrace upon which they stand was once the bank of the Mississippi, and that they were abandoned when the river left its ancient bed, the question arises, is there any ascertainable uniform rate of recession by which the centuries may be estimated which have passed since that time? Perhaps the question admits of no satisfactory answer. Still, we will venture one speculative estimate. The river has receded (as at New Madrid) about one mile in seventy years. Assuming the mean distance of these works to be now fifteen miles inland, the computation upon these premises would give, in round numbers, one thousand years as the time of their desertion. Another question arises here relating to the length of time required for the cypress swamp to take possession of the deserted channel of the river. Does it follow it up by slow degrees, or appear at one and the same time throughout its length?

One other fact only can be noted in this connection. This whole region has been terribly shaken and disturbed by earthquakes. During the earthquake of 1811 the old town of New Madrid disappeared, the river changed its southward course and for several

hours flowed back upon itself. For many miles, long zig-zag fissures and yawning chasms were opened, large tracts of land sank down and lakes and pools of water now fill the openings, over which as we sail, far down in the deep, still water, may be seen the ghostly branches of the sunken forests. Possibly some similar catastrophe suddenly changed the course of the river and caused its bed to become a vast malarious swamp, rendering the whole region sickly and almost uninhabitable as it is to-day. The appearance of these remains would favor the idea that they were suddenly abandoned. The chronological question may be a sealed book which no man can open; and the speculations thus briefly indulged in may possibly—if they have no other value—indicate the direction in which we may look with some signs of promise for those facts which shall shed further light upon the life and times of this mysterious race.

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No. 5

### *Age of our Porphyries.*

By G. C. BROADHEAD.

In the *American Naturalist* of April, 1875, Prof. T. Sterry Hunt says, "The porphyries of Southeast Missouri seem to be identical with those of Lynn, Saugus, Marblehead, and Newburyport, Mass., which are traced thence along the coast of Maine and New Brunswick, and are well developed about Passamaquoddy Bay, where they occasionally contain small deposits of iron ore." They are also compared with the rocks of the north shore of Lake Superior, and are regarded as Huronian. On the coast of New Brunswick they are intimately associated and interstratified with schistose rocks, supposed to be of Huronian age.

On p. 187 of his *Chemical and Geological Essays*, Dr. Hunt says, "they present great uniformity of type, though in every place subject to variations from a compact jaspersy rock to a more or less coarsely granular variety, all of which are often porphyritic from the presence of feldspar crystals, and sometimes include grains or crystals of quartz. In color they are generally some shade of red, varying from flesh-red to purple, pale yellow, greenish, or black. On the coast, these rocks are distinctly stratified,

and are closely associated with dioritic, chloritic, and epidotic strata."

Further on, he says, "stratiform rocks seemingly identical with these quartziferous feldspar porphyries *abound* in MISSOURI, where they are associated with the iron ores of Iron Mountain and Shepard Mountain. The breccia and conglomerate, in which is found the native copper of the Calumet and Hecla and the Boston and Albany mines of the Keweenaw peninsula, on the south shore of Lake Superior, is made up in large part of the ruins of similar orthophyres."

Again, in *Proceedings of Boston Society of Natural History*, April, 1875, Dr. Hunt mentions the feldspar porphyry, or orthophyre, so abundant along the eastern coast of Massachusetts, Maine and New Brunswick, and which passes on the one hand into a jaspery petrosilex, and on the other into a finely granular, almost granitoid, rock.

In its typical and most common form, it is a fine-grained impalpable mixture of orthoclase and quartz, generally of red, brown or purple color, and porphyritic chiefly from presence of feldspar (orthoclase) crystals, and often grains of crystalline quartz. This rock is in contact with the fossiliferous LOWER CAMBRIAN (*Menevian*) strata of Braintree, Mass., and is identical with the porphyries of Southeast Missouri. It is referred to the HURONIAN rocks.

Further on, Prof. Hunt says that "the unchanged fossiliferous strata are seen resting on the Huronian rocks, and include in some cases fragments derived from these rocks. These strata are likewise seen to be older than the Menevian, which at St. John, New Brunswick, includes materials derived therefrom. At Hastings, Ontario, these ancient rocks occupy a position between the Laurentian and the fossiliferous beds of the Trenton."

Prof. T. B. Brooks, in *Am. Jour. of Science* for March, 1876, speaking of the rocks, above referred to, near Lake Superior, regards them as Huronian.

Prof. Pumpelly, in Mo. Geological Report for 1872, speaks of Archæan rocks of S.E. Missouri, but does not say whether he considers them as Huronian or Laurentian; but he infers that the granite of S.E. Missouri may be older than the porphyry.



Prof. Dana, in his *Manual of Geology*, 1874, speaks of the rocks at Pilot Knob, Mo., as Laurentian.

Our best authorities on the Archæan rocks are Dana and Hunt; they have carefully studied them and are high authorities, yet we know that in many important points of geology they do not agree. Their opinions are greatly to be respected. We honor them for their life-long devotion to science. We could wish that they could visit every place where porphyry or granite is found in Missouri. Prof. Hunt has seen the porphyries at Iron Mountain and Pilot Knob and near by these places. We do not know to what extent nor how far from those places he has seen them.

Prof. Pumpelly studied the porphyries and iron ores very carefully near and at those points, but I scarcely think he has seen sufficient to form a decided opinion of the age of the rocks of the whole region; for, in a note on page 3 of Mo. Geol. Rep. 1872, he states that there are no hornblendic dykes in the porphyry. Now, I know of a dyke of hornblendic rock, 6 feet wide, standing up like a wall and in a porphyry region, 14 miles south of Pilot Knob, on south side of Buck Mountain. Greenstone is frequently found in both Iron and Madison Counties, Mo., associated with porphyry; and, although more often found in loose, tumbled masses, it occurs along a certain course, so as to leave no doubt of its being from dykes protruding through porphyry. In the Geological Report for 1874 (Madison Co. Rep.) several greenstone and dolerite dykes are mentioned, some protruding through granite, others through porphyry.

Not having seen the rocks on the Atlantic coast referred to by Prof. Hunt, I am unable fully to compare ours, but I think it highly probable that our granites and porphyries may be of different age; the granites may be older than the porphyries. Very careful geological study of these districts of Missouri may result in important deductions very useful to science.

In these rocks we have no fossils to guide us, and we can only be guided by their lithological appearance, or mineral contents. Prof. Hunt's description of the eastern porphyries would answer for many of ours. Ours are divided mainly into two classes, one an exceedingly fine-grained jaspery rock, and the other a coarser one, which in texture resembles a granite. The finer grained ones are either black, or with some shade of red; in fact, even the

## ON THE PEOPLING OF AMERICA.

BY AUG. R. GROTE.<sup>1</sup>

THE conclusion was first reached by myself in a paper<sup>2</sup> read before the American Association, August, 1875 (since reprinted in several journals), that we should find colonies of Arctic man upon mountains in the temperate zone of North America, had all the conditions for his survival on these elevations been fulfilled in his case as they have been in that of certain plants and animals. That the Eskimos are the existing representatives of the man of the American Glacial epoch, just as the White Mountain butterfly (*Oeneis semidea*) is the living representative of a colony of the genus planted on the retiring of the ice from the valley of the White Mountains, seemed to me at that time a natural conclusion. In a subsequent paper,<sup>3</sup> Dr. C. C. Abbott, basing his remarks on paleolithic implements discovered by himself in New Jersey, says: "It is fair to presume that the first human beings that dwelt along the shores of the Delaware were really the same people as the present inhabitants of Arctic America." The title of Dr. Abbott's paper is "Traces of an American Autochthon," and in it he institutes a comparison of the paleolithic implements of New Jersey with those of Southern France. According to a foot-note of Dr. Abbott's it appears that in 1875 Dr. Rink<sup>4</sup> was "strongly of opinion that the Eskimo are an indigenous American people who have been pushed northwards by the intrusive Indian tribes." A note of mine in objection to the idea that paleolithic man in North America is an "autochthon" will be found in The American Naturalist for July, 1876, p. 432.

It will be seen that, independently of each other and from different stand-points, the fact that we have in the Eskimo a survival of paleolithic man in North America has been arrived at by Dr. Abbott and, previously, by myself. The subsequent dis-

<sup>1</sup> Read before the Buffalo Society of Natural Sciences, February 2, 1877.

<sup>2</sup> Effect of the Glacial Epoch upon the Distribution of Insects in North America, Proc. Am. Assoc. Adv. Sci., Detroit Meeting, B. Natural History, 225.

<sup>3</sup> Am. Nat., June, 1876, 329.

<sup>4</sup> Tales and Traditions of the Eskimo, London, 1875.

covery by Professor Dana<sup>1</sup> of remains of the reindeer in glacial deposits in the valley of the Connecticut, and the determination of the beds in which the rough stone implements were found as ancient moraines, help to assign a geological age to the presence of man in North America, as well as to give a picture of his surroundings. I have endeavored to carry out the original idea which I entertained, that Glacial man would be found to have suffered an equal fate with the fauna of the Ice period, by a study of migrations.

In a lecture delivered in the course of the Buffalo Society of Natural Sciences,<sup>2</sup> January 6, 1877, I published the conclusions arrived at, already briefly sketched in my note in *The American Naturalist* for July of the preceding year. I proposed to distinguish: "A *primitive* migration, one influenced solely by physical causes affecting man's existence, and which must have been in more extensive operation in early times when he was unprovided with means of his own invention against unfriendly changes in his surroundings. Such migrations, or a modified survival of them, are operative now among our Indians, who move from place to place with the game upon which they subsist and with the season. A *culture* migration, one arising out of a certain stage of intellectual advancement when the movements of man are determined by ultimate and not immediate considerations. The movements of the Indo-European races fall within this category. Besides these is to be distinguished an *accidental* migration, which man has submitted to against his will. The accidental migrations of man may be considered as belonging to the epochs of culture migration, since they must more usually have occurred with races advanced in the art of navigation. A separation of individuals from communities under the pressure of storms, earthquakes, volcanic eruptions, etc., may have happened, however, in the earliest times."

It will be seen that I differ from Dr. Abbott by considering the presence of the progenitors of the Eskimo over the main belt of this continent during the Ice period as due to "a primitive and unconscious migration determined by the shifting of their congenial surroundings." It does not appear that Dr. Rink couples the migration of the Eskimo with the movement of the ice over this continent. Indeed, his idea seems opposed to this, and does not imply any relation between the Eskimo and the Ice period.

<sup>1</sup> *Am. Jour. Sci. Arts*, 353, November, 1875.

<sup>2</sup> *Buffalo Courier*, January 7, 1877. Reprinted in *Popular Science Monthly*, March, 1877.

These discoveries and considerations open up the question of Tertiary man. It is certain, as I have elsewhere suggested, that man could not have originated at the foot of the glacier. The ice must have met him, towards the close of the Tertiary, in the northern parts of Asia and America and forced him southward; or, at a later time, it must have found him on the main belt of this continent. The Tertiary origin of man is presupposed from the fact that he had submitted to a race modification fitting him to endure the cold. Some support for these ideas may be found in examining northern strata; it must be borne in mind, however, that the north has never been free from ice since the close of the Pliocene to this day.

It would appear more sensible, in view of the present ascertained facts of science, that for the original Tertiary form of man we should search a territory inhabited at that time by animals the nearest related to him. Considerations of this kind will prevent us from entertaining the belief that man originated in America. We must still believe that America has always been for man the New World.

If we turn to the detached Antarctic lands, covered by glaciers descending to form an ice wall along their coasts, to be fretted away by the beating of the ocean waves, we see that other sciences may be advanced by their exploration, but anthropology only indirectly. In February, 1842, Ross reached the most southern point yet attained, lat.  $78^{\circ} 11'$ , long.  $161^{\circ} 27' W.$ , and it is strange that both he and Weddell<sup>1</sup> report an open sea before them to the south, as Kane did to the north.

So soon as Arctic America is explored by means of the establishment of permanent stations of observation, akin to that in operation on Mount Washington, a system recently recommended in this country as well as in Europe, important data as to the introduction of man on this continent cannot fail to be brought to light. The establishment of an International Scientific Service for the observation of astronomical, meteorological, geological, and zoölogical phenomena commends itself at the present time to the more civilized powers. The different governments established by the white races should contribute their quota of the expenses for the establishment and maintenance of posts of observation in different localities over the globe, to be decided upon by commissions of specialists. In time of war such posts should be held neutral, as well as their service, under

<sup>1</sup> Neumayer, Zeits. Ges. Erdk., 1872.

a flag and protected by the operation of international law. In the case of the Arctic regions, Great Britain, the United States, Russia, and Scandinavia are the more interested from their geographical position; yet other powers are directly interested in the solution of the different problems which will be offered though the knowledge of those parts of the earth's surface. In Madagascar we must also expect some evidence to be forthcoming with reference to the origin of man. A definite settlement of the latter question can be arrived at if evolution be true. Is not this a question to call for the active interest of the cultivated races? Its settlement would greatly advance our material interests as a species by giving us a mental habit in accordance with the facts in the case. I think that the prospect alone of arriving at a solution of this question should prompt concerted action, either by a scientific service or such other means as experience may prefer.

When we examine into the question of the stone implements, which prove the fact of the presence of man, we must see that the earlier man must have first used a stone as he found it. "There must have been a time when men picked up such stones as came in their way at the moment with which to throw at animals, to break their food, to injure their fellow men. Such stones, unaltered by use, can no longer be identified." There will be an imperfection here in the record from implements.

The difficulty of supposing man to have been first introduced into America during the Quarternary period lies in the fact that he must have been in the Stone age when the migration was made. This difficulty vanishes if, as I suppose, man entered upon possession of this continent during the Pliocene, and before the Ice period had interfered with a warm climate in the north. This will leave us free to consider American civilizations indigenous. The idea is here suggested that the Ice period acted as a barrier to inter-communication between Asia and North America. The part allowed hitherto by anthropologists to accidental migration in the peopling of North America will be found, I think, exaggerated. We may conceive that this peopling was effected during the Tertiary; that the ice modified races of Pliocene man, existing in the north of Asia and America, forced them southward, and then drew them back to the locality where they had undergone their original modification. Also, we may suggest that other than Arctic man may have existed across the main belt of this continent during the Pliocene, and that his subse-

quent intellectual development, as we find it recorded in the West, Mexico, and South America, etc., is the result of his environment acting upon his isolated condition.

The object of the present paper is to call attention to this hypothesis, which must be studied from the point of view that man's earlier migrations were not distinguishable in kind from those of lower animals. It seems to me quite evident that, at a time when instinct was developing into reason, the migrations of man must have had a motive which was not far removed from that influencing certain lower animals under the same circumstances. If we concede this, it follows that the objects of man's primitive migrations were more immediate, and of his culture migrations more remote. This one fact, that the distribution of man over the surface of the globe is more general than that of any other animal, will support the view that, through the fertility of his resources, he has been able to outgrow the limitations originally imposed upon him. But these resources must have been brought into play by experience; and their cost was surely the premature perishment of many of the kind.<sup>1</sup> During the process, then, which resulted in the race modification of the Eskimos, their original numbers must have been decreased by the slowly but ever increasing cold of the northern regions, until experience and physical adaptation combined brought them to a state of comparative stability as a race.

We must also consider that the farther back we go the nearer we must come to a common race of man, supposing the theory of the essential unity of his origin to be true, while I think the probable effect of the Ice period upon climate and the present development of man has not been hitherto sufficiently considered. The entire environment must be taken into consideration, however complex it is and at whatsoever cost to us the knowledge of it is to be attained, before we can grasp the true picture of the succession of events which have resulted in man as we now find him on the different lands of the globe. With the thinking minds of our race, the question of the origin of man is the question of the century.

The hypotheses as to the manner in which the early peoplings of America were effected, developed in the present and previous papers of mine, are as follows: —

<sup>1</sup> Many birds witness the death of their companions by the hunter with indifference when first discovered by man, but afterwards, from observation, avail themselves of all their natural means to escape from the danger. It is possible that it was not difficult for Tertiary man to supply himself with animal food even with his imperfect weapons.



(1.) That during the Tertiary period man had spread from Equatorial lands on the eastern hemisphere to Northern Asia, and had then crossed into America from the North.

(2.) That in at least as early as Pliocene time man had migrated down the high lands adjacent to the mountainous backbone running along the western side of the two Americas.

(3.) That the Ice period produced a race modification of the man living in the extreme north, and that the advance of the ice prevented further communication between the Old and the New Worlds until comparatively recent times.

(4.) That this race accompanied the great glacier on its advance and retirement over North American territory, and that the existing representatives of this race are the Eskimos.





# OBSERVATIONS

ON A

## GOLD ORNAMENT FROM A MOUND IN FLORIDA.

BY

CHARLES RAU.

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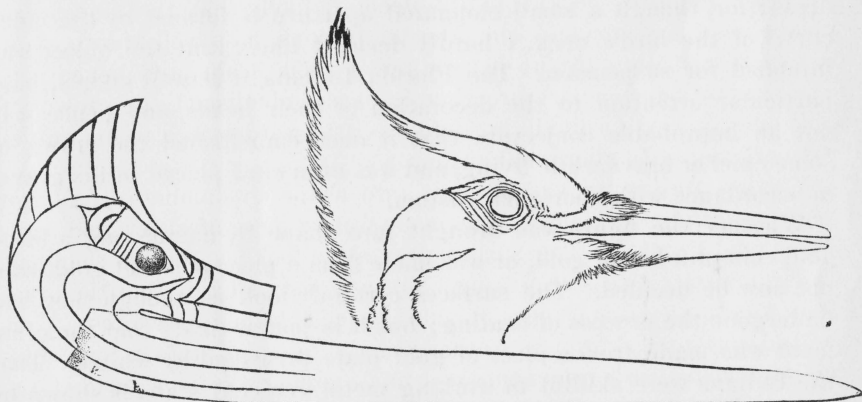
# OBSERVATIONS ON A GOLD ORNAMENT FROM A MOUND IN FLORIDA.

By CHARLES RAU.

In December, 1877, Mr. Damon Greenleaf, of Jacksonville, Florida, sent for examination to the National Museum a curious relic of gold, lately discovered in a mound in Manatee County, Southern Florida, with a request for information as to its probable origin and use.

The accompanying illustration represents the object in question reduced to one-half of its natural size, the original measuring exactly nine inches from the point to the middle of the opposite curve. It is cut from a flat piece of gold plate, not quite a millimeter in thickness, and somewhat thinner toward the edge. The specimen is broken in two pieces, as indicated by the dotted line in the figure; but the two parts fit well together, and thus the original character of the object remains unaltered. On the whole, it is in a good state of preservation, though the effects of long exposure are plainly visible. Both faces appear bright and smooth, and the engraved lines, which represent exactly the same pattern on both sides, seem to be as fresh as on the day when they were traced.

Little need be said concerning the shape of the ornament, considering that all its features are distinctly expressed in the cut. The maker evidently intended to represent a bird's head, the neck of which forms a blade-like prolongation, and the grotesque execution clearly illustrates



Gold ornament from a mound in Florida, and head of the ivory-billed woodpecker. ( $\frac{1}{2}$ ).  
the curious taste characterizing the ornamental work of the North American Indian. It never would occur to a person of Caucasian origin



to represent a bird's head in the peculiar manner here exhibited. The eye of the bird, it should be stated, has been formed with great regularity by the process of punching from the under side, and perfectly resembles in size and convexity the head of a common brass tack. However clumsy the design of the object may appear to a common observer, the ornithologists of the National Museum have discovered the prototype that was before the aboriginal artist's mind. The truncated bill and recurved crest leave no doubt that he intended to represent the ivory-billed woodpecker (*Picus principalis*, Linn.; *Campephilus principalis*, Gray), a bird quite frequent in Southern Florida, but not found at any great distance from the Gulf of Mexico. To facilitate comparison, a half-size sketch of the head of the ivory-billed woodpecker is placed in juxtaposition with the cut representing the aboriginal relic.

The composition of the gold plate from which the specimen is made indicates its post-Columbian origin. Having been forwarded, through the courtesy of Mr. E. B. Elliott, chief clerk of the Bureau of Statistics, to the Mint at Philadelphia, for the purpose of ascertaining its weight and composition or fineness, it was found to weigh 1.53 ounces (troy), and to consist exclusively of gold and silver, in the proportion of 893 parts of gold to 107 parts of silver. Consequently, the amount of gold therein contained is 1.366 ounces, and of silver 0.164 ounce (troy). The metal value of the relic is twenty-eight dollars and forty-five cents. According to Mr. Elliott's statement, its composition corresponds almost exactly with that of the "ounce" of gold or quadruple of Spain bearing the date of 1772; and this circumstance is not without significance, in so far as it seems to point to the source from which the material of the figure was derived. It may have been given by Spaniards to some Indian, who fashioned it, according to his taste, to serve as a totemic emblem or ornament, perhaps designed to form a part of the head-dress; for, though a small elongated aperture is formed by the inner curve of the bird's neck, I hardly deem it likely that the object was intended for suspension. The Florida Indians, it is well known, paid particular attention to the decoration of their heads, and hence it is not an improbable conjecture that it once embellished the crown of some chief or brave while living, and was afterward placed in his grave, in accordance with aboriginal custom.

Whether the figure was brought into shape by hammering a large gold coin or a bar of gold, or was made from a piece of sheet gold, cannot now be decided. The surfaces certainly look as though they had undergone the process of beating; but it is just as likely that the ornament was made from a piece of gold plate furnished by whites. That the Indians were skillful in working metal in a cold state is shown by the implements and ornaments of copper found in various parts of the United States, more especially in the neighborhood of Lake Superior, where their supplies of native copper were chiefly obtained. Even

modern Indians practise the art of working silver dollars, beating and cutting them into tasteful gorgets, ear-rings, and other objects of personal adornment. On the other hand, there is no ground whatever for supposing that the Indians north of Mexico possessed the skill of casting gold, and far less of producing an alloy like that of which the Florida ornament is composed.

While I am of opinion that the material of the relic was obtained from whites, I ascribe (as stated) the work itself—that is, the cutting out of the figure and the tracing of the lines—to the agency of an aboriginal artist. The ornamental lines, though incised with a steady hand, are not uniform in width, and in some places the tracing forms a double line, as though the implement used in lieu of a graver had not been provided with a sharp point. A knife which has lost its extreme point would produce such lines; perhaps also a pointed flint. The latter alternative, however, is hardly admissible, considering that at the time when the object was made, implements of such primitive character probably had been superseded by more efficient instruments of iron or steel. The North American Indians, like other savages, were not slow in recognizing the superiority of the white man's tools, and adopted them without hesitation.

Though it would be hazardous to pronounce a definite opinion concerning the age of the relic, it may be assumed that it is not very old. Its origin may not date back more than a century. It was perhaps made during the second period of Spanish supremacy in Florida, which lasted from 1780 to 1821, when the province was ceded to the United States. The ornament was taken *from the centre* of the mound, and doubtless formed a part of a primary burial. This fact affords an additional evidence that mound-building was continued in this country after its occupation by Europeans. "The man who dug it out," says Mr. Greenleaf, "had no idea that it was gold. He had been digging all day, and was just giving up the work, when, with a final desperate blow, he struck, broke, and brought to light the gold ornament. He then explored the rest of the mound carefully, but found nothing but fragments of pottery and crumbling bones."

Purely aboriginal relics of gold appear to be extremely rare in this country. According to Colonel Charles C. Jones, Indian beads composed of that metal have been met with in Georgia. He says: "Gold beads—evidently not European in their manufacture—have been found in the Etowah Valley, in the vicinity of the large mounds on Colonel Tunlin's plantation."\* This statement is corroborated by Mr. M. F. Stephenson in an article on ancient mounds in Georgia, which was published in the Smithsonian Report for 1870. I am not aware that Indian relics of gold have been found in Florida in modern times; but mention is made of a small gold bell obtained in 1527 by the party of the unfortunate Pamphilo de Narvaez, immediately after his landing in Florida. It was

\* Antiquities of the Southern Indians. New York, 1873, p. 48.

discovered in one of the large houses (*buhios*), which the natives had deserted upon the approach of the Spaniards.\*

We learn from the old accounts relating to the discovery and colonization of the large tract of land formerly called Florida that the aboriginal inhabitants were cognizant of the occurrence of gold in their districts. The grains of gold which the early Spanish visitors saw in the possession of the Floridians excited their cupidity, and inspired them with the hope of finding a second Mexico or Peru in the more northern portion of the new continent. Upon asking the Indians where the precious metal had been obtained, they were referred to the "Apalatcy" Mountains, in the north, from which rivers carrying particles of gold, silver, and copper were flowing. The Indian method of collecting these metallic grains is represented on plate 41, vol. ii, of De Bry's *Peregrinationes* (Frankfort on the Main, 1591), where the natives are pictured as using long tubes for this purpose. Jacques Le Moynes de Morgues, the artist of Laudonnière's expedition, to which the volume relates, probably drew the sketch from imagination, or according to what he had heard from the Indians, who were never noted for their veracity. The short Latin description accompanying the sketch closes with the statement that the Spaniards knew how to apply these treasures to their own use. Indeed, traces of mining operations which are ascribed to the Spaniards have been found in the gold district of Georgia. It would be foreign to my purpose to enlarge on this subject; but I will refer to two articles by Dr. D. G. Brinton, which treat of this early mining: one forms the third appendix to his excellent little work entitled *Notes on the Floridian Peninsula*; the other is published in the *Historical Magazine*, vol. x (1866), p. 137, under the title "Early Spanish Mining in Northern Georgia." Additional information on the subject is to be found in Colonel Jones's work, to which I have referred on the preceding page.

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\* "Un de ces buhios était si grand, qu'il pouvait contenir plus de trois cents personnes: les autres étaient moins vastes; nous y trouvâmes une clochette en or parmi des filets."—*Relation et Naufrages d'Alvar Nuñez Cabeça de Vaca*. Paris, 1837, p. 24. (Ternaux-Compins Collection.) The Spanish original was published in the year 1555 at Valladolid.

# ABORIGINAL STRUCTURES

IN

## GEORGIA.

BY

CHARLES C. JONES, Jr. .

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1878.



# ABORIGINAL STRUCTURES IN GEORGIA

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BY CHARLES C. JONES, JR.

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## I.

### BIRD-SHAPED STONE TUMULI IN PUTNAM COUNTY, GEORGIA.

The existence of curious effigy-mounds in the southern counties of Wisconsin was noted by Mr. Lapham in 1836. Subsequently, Mr. Taylor, Professor Locke, and Messrs. Squier and Davis furnished additional information in regard to the distinctive characteristics of these unusual structures. It was reserved, however, for the Smithsonian Institution, in the seventh volume of its "Contributions," to furnish, from the pen of Mr. Lapham, the most complete account of these interesting remains. They were quite numerous along the great Indian trail or war-path from Lake Michigan, near Milwaukee, to the Mississippi above the Prairie du Chien. Generally representing men, buffaloes, elks, bears, otters, wolves, raccoons, birds, serpents, lizards, turtles, and frogs, in some instances they were supposed to typify inanimate objects, such as bows and arrows, crosses, and tobacco-pipes. While the outlines of not a few had been seriously impaired, others in a spirited and correct manner declared the objects of their imitation. Constructed of earth, they varied in height from 6 inches to 7 feet. In certain localities the animals were delineated not in relief but in *intaglio*, by excavations and not by elevations.

Two *animal mounds* have been observed in Ohio. On an elevated spur of land near Granville is an earthwork known in the neighborhood as the *Alligator*. Its total length is 250 feet. The head and body, four sprawling legs and a curled tail, were all clearly defined. Across the body it was 40 feet broad, and the length of the legs was 36 feet. Four feet expressed the average height, while at the shoulders the mound attained an elevation of 6 feet. It was manifestly the effort of the primitive workmen to preserve the proportions of the reptile.

Situated on a ridge rising 150 feet above Brush Creek, in Adams County, is a still more remarkable structure, which, from its configuration, has received the appellation of the *Great Serpent*. "Conforming to the curve of the hill, and occupying its very summit, is the serpent, its head resting near the point and its body winding back for 700 feet in graceful undulations, terminating in a triple coil at the tail." If extended, its entire length would be not less than 1,000 feet. The em-

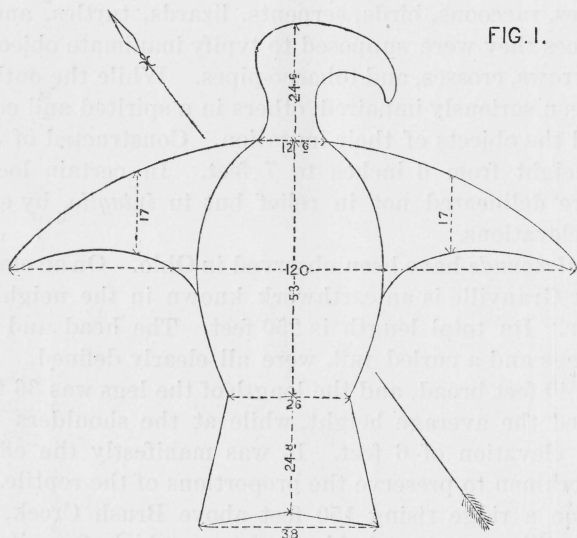


bankment is upward of 5 feet high, with a base diameter of 30 feet at the center of the body, whence it diminishes somewhat toward the head and tail. "The neck of the serpent is stretched out and slightly curved, and its mouth is opened wide, as if in the act of swallowing or ejecting an oval figure, which rests partially within the distended jaws."

When and by whom these remarkable tumuli were built is not known. The object of their construction is equally a matter of conjecture.

It has been supposed that these animal-shaped mounds existed only in Wisconsin and a few other localities in the West. Our recent observations prove, however, that the primitive dwellers in the South have left similar traces of their constructive skill.

Six miles and a half north of Eatonton, in Putnam County, Georgia, on a plantation owned by the heirs of the late Mr. I. H. Scott, may now be seen a bird-shaped mound of definite configuration. Located in the midst of a beautiful wood, and crowning a high ridge near the headwaters of Little Glady Creek, it is composed entirely of bowlders of white quartz rock, gathered from the adjacent territory. Most of these bowlders are of such size that they could have been transported by a single individual. For the removal of others two or three persons would have been requisite. These bowlders were carefully piled one above another, the interstices being filled with smaller fragments of milky quartz. Into the composition of the structure enters neither earth nor clay.



Scale 40 feet to 1 inch.

Bird shaped stone mound in Putnam County, Georgia.

This stone mound represents an eagle lying upon its back, with extended wings. (See Fig. 1.) The head is turned toward the east. In the construction of this tumulus respect was had to the object imitated;

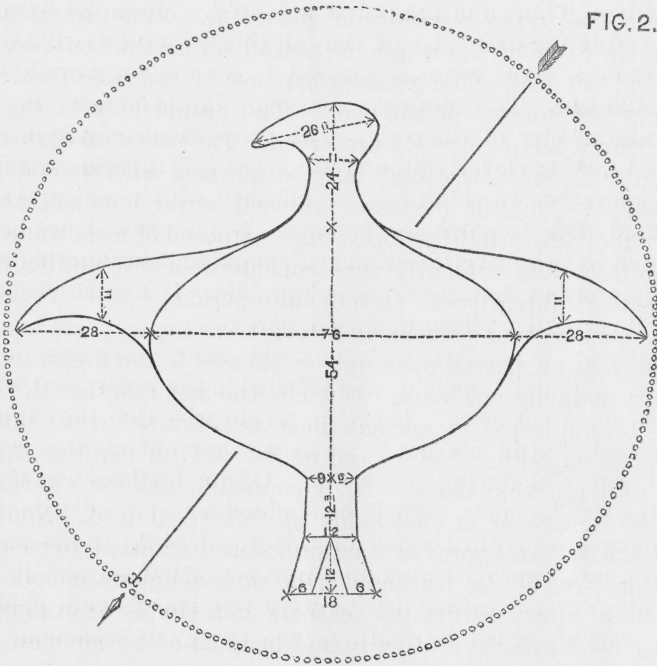
the height of the tumulus at the breast of the bird being between 7 and 8 feet, its altitude thence decreasing toward the head and beak, where it is not more than  $2\frac{1}{2}$  feet high, and also toward the extremity of the wings and tail, where it has an elevation of scarcely 2 feet. The beak is decidedly aquiline, and the tail is indented. Measured from the top of the head to the extremity of the tail this structure is 102 feet long. From tip to tip of the wings, measured across the body, we have a distance of 120 feet. The greatest expanse of tail is 38 feet, the same as the lateral diameter of the body. The proportions of the head, neck, wings, and tail are cleverly preserved. That this tumulus was designed to typify an eagle, we think may be affirmed with some degree of confidence, and that it possesses unusual attractions will not be denied. Surrounded by primitive forest and composed of most durable material, its antiquity is evidently very considerable. If undisturbed, it will preserve its integrity for an indefinite period.

By some curious persons an attempt was made, years ago, to pry into its secrets. A partial opening was effected in the breast, but with what results we could not learn. It excites no surprise that the eagle should have been selected in ancient times as a symbol of all that was swift, powerful, watchful, daring, and noble. Of its feathers was the battle-flag of the Creeks made. Their council-lodges were surmounted with carved images or stuffed skins of this regal bird. None among the Cherokees, save approved warriors, were permitted to wear its plumes. To this king of the feathered tribe were religious honors paid by the Natchez, who regarded its feathers not simply as ornaments and trophies, but as marks of dignity and insignia of no common import.

About a mile and a half from Lawrence's Ferry, on the Oconee River, and situated on a stony ridge near the main road, on the plantation of Mr. Kinchen D. Little, in Putnam County, is another of these bird-shaped mounds. Like the former, it is composed wholly of bowlders of white quartz rock, collected from the hill on which it stands. (See Fig. 2.)

Its dimensions do not materially differ from those of the tumulus on the Scott place. The tail, however, is bifurcated. The head of the bird lies to the southeast, and its wings are extended in the direction of northeast and southwest. The entire length of the structure, from the crown of the head to the end of the tail, is 102 feet and 3 inches. For a distance of twelve feet the tail is bifurcated, and just above the point of bifurcation it is 12 feet wide. Across the body, and from tip to tip of the wings, the tape gave us a measurement of 132 feet. The body of this bird, which is evidently lying upon its back, is stouter than that of the eagle, being 76 feet in diameter. Its wings are relatively shorter. The proportions of the head, neck, and tail are tolerably well observed. What particular bird this tumulus is designed to typify, we are at a loss to suggest. The altitude at the breast is about 5 feet, and from that point the structure tapers to the head and tail, which are some

two feet high. At the tips of the wings, which are short and curved, the height is not more than a foot and a half. The ridge upon which this mound rests has never been cleared.



*Scale 40 feet to 1 inch.*

Bird-shaped stone mound in Putnam County, Georgia.

Surrounding this bird-shaped tumulus is an inclosure of rocks similar to those of which the mound is built. This stone-circle is symmetrical in outline, and at its nearest approach passes within a few feet of the tips of the wings.

Crowning the elevated ridges by which this county is traversed, are occasional rock-mounds of artificial origin. Usually from 4 to 8 feet high, and with base diameters of from 30 to 40 feet, they are circular in form, and are composed of the fragments of milky quartz so common in the region. Some have been opened, and from them have been taken human bones and relics of various sorts. Manifestly such are grave-mounds, it being easier in the rocky neighborhood to heap such stone-piles above than to cover the dead with earth. Of this class of tumuli we instance one on the plantation of Dr. J. T. de Jarnette, 12 miles from Eatonton and about a mile from the Oconee River, and another on the land owned by Capt. A. S. Reid, four miles from Eatonton and near Little River.

It was intimated by some of the early observers that tumuli of this

description were not infrequently temporary in their character, and designed as a protection to the dead who perished away from their homes, until such time as they could be conveniently removed and carried back for interment in the established burial-grounds of the tribe or community of which the deceased were members. While it may be true that some, and perhaps many of the smaller rock-piles so frequent in many portions of Cherokee Georgia, may have originated in this way, we are of opinion that the substantial structures to which we have alluded are permanent in their character, and were erected as enduring memorials of the primitive dead of this region. Surely no more lasting monuments could have been devised at that early period.

The existence of two distinctly marked bird-shaped mounds, of firm construction and excellent proportions, within the territory occupied by the Southern tribes, is deeply interesting, and will attract the attention of the student of American archæology.

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## II.

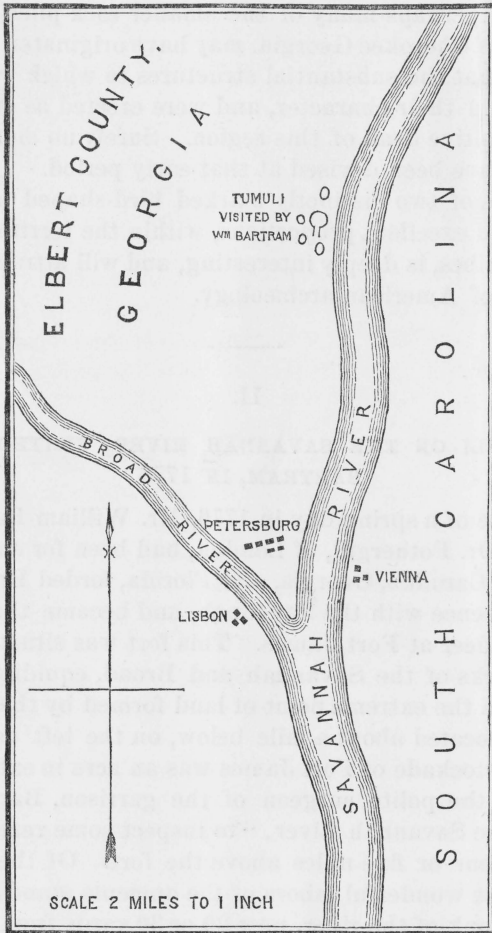
### ANCIENT TUMULI ON THE SAVANNAH RIVER, VISITED BY WILLIAM BARTRAM, IN 1776.

Near the close of a spring day in 1776, Mr. William Bartram, who, at the request of Dr. Fothergill, of London, had been for some time studying the flora of Carolina, Georgia, and Florida, forded Broad River just above its confluence with the Savannah, and became the guest of the commanding officer at Fort James. This fort was situated on an eminence in the forks of the Savannah and Broad, equidistant from those rivers, and from the extreme point of land formed by their union. Fort Charlotta was located about a mile below, on the left bank of the Savannah. The stockade of Fort James was an acre in extent.

Attended by the polite surgeon of the garrison, Bartram made an excursion up the Savannah River, "to inspect some remarkable Indian monuments," four or five miles above the fort. Of them he writes as follows: "These wonderful labors of the ancients stand in a level plain very near the bank of the river, now 20 or 30 yards from it. They consist of conical mounts of earth, and four square terraces, &c. The great mount is in the form of a cone, about 40 or 50 feet high, and the circumference of its base two or three hundred yards, entirely composed of the loamy, rich earth of the low grounds; the top or apex is flat; a spiral path or track leading from the ground up to the top is still visible, where now grows a large, beautiful spreading red cedar (*Juniperus Americana*). There appear four niches excavated out of the sides of the hill, at different heights from the base, fronting the four cardinal points; these niches or sentry-boxes are entered from the winding path, and seem to have been meant for resting places or lookouts. The circumjacent grounds are cleared and planted with Indian corn at present,

and I think the proprietor of these lands, who accompanied us to this place, said that the mount itself yielded above one hundred bushels in one season. The land hereabouts is indeed exceeding fertile and productive."

Fig. 1.



Ancient tumuli on the Savannah River.

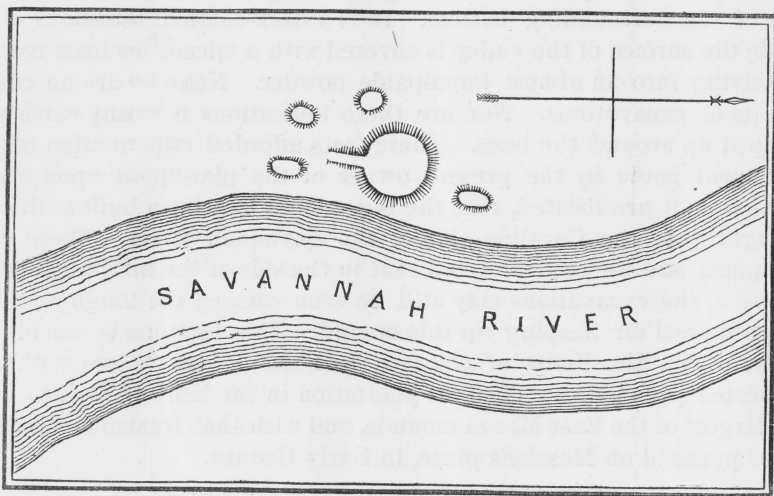
Unable satisfactorily to determine the precise object the aborigines had in contemplation in the erection of this striking monument, he hazards the conjecture that the Indians formerly possessed a town on the river bank, and raised this mound as "a retreat and refuge in case of inundations, which are unforeseen, and surprise them very suddenly, spring and autumn."

What were the uses of the smaller elevations he does not suggest.

Wishing to note the changes which might have occurred during the past hundred years, we visited these tumuli a few weeks since. The attendant mounds, which are mainly grave-mounds, had been materially

wasted by the plowshare and the influences of the varying seasons. The tetragon terraces had lost their distinctive outlines, and were little more than gentle elevations; their surfaces littered with sherds of pottery and flint chips, and occasionally with fragments of human bones. Freshets had sadly marred the level of the adjacent space. Overleaping the river bank, the turbid waters had carved deep pathways in the surface of the valley on both sides of the "great mount." There it remained, however, wholly unaffected by these unusual currents. It had evidently suffered no perceptible diminution in its recorded dimensions. The Savannah River still pursued its long-established channel, but "the four niches or sentry-boxes," if they formerly existed, were entirely gone, and of "the spiral path or track leading from the ground up to the top" we could discover no trace. On the south a roadway, about 15 feet wide and commencing at a point some distance from the base of the mound, leads with a regular grade to the top. This manifestly furnished the customary means of ascent, as the sides are too precipitous for convenient climbing. This feature seems to have escaped Mr. Bartram's observation.

Fig. 2.



Ancient tumuli on the Savannah River.

Not having been cultivated for many years, the apex and sides of this truncated cone are now clothed in a luxuriant growth of trees and swamp cane. Attired in such attractive garb, this tumulus forms a marked object in the profile of the valley from which it springs. Proofs of long-continued occupancy, by the aborigines, of the adjacent territory are abundant. Ancient burial-places, the sites of old villages, traces of open-air work-shops for the manufacture of implements of jasper, quartz, chert, greenstone, and soapstone, refuse piles, and abandoned fishing resorts, are by no means infrequent along both banks of the Savannah River for many miles. Upon the advent of the European the



circumjacent valley was found cleared and in cultivation by the red men, who here had fixed abodes and were associated in considerable numbers. The Southern tribes, in the sixteenth century, subsisted largely upon maize, beans, pumpkins, and melons. These they planted, tended, and harvested regularly. Of their agricultural labors at the dawn of the historic period we have full accounts.

So vast are the proportions of this largest mound that we are persuaded it rises beyond the dignity of an artificial place of retreat, elevation for chieftain-lodge, or mound of observation.

It appears entirely probable that it was a temple-mound, built for sun-worship, and that it forms one of a well-ascertained series of similar structures still extant within the limits of the Southern States. These Florida tribes, as they were called in the days of De Soto, worshiped the sun and were frequently engaged in the labor of mound-building. Over them ruled kings who exercised powers well-nigh despotic. Often were the concentrated labors of the nation directed to the accomplishment of allotted tasks. Hence, within the territory occupied by these people, we find many traces of early constructive skill of unusual magnitude.

The material employed in erecting this large tumulus differs from the soil of the surrounding bottom. It is a dark-colored, tenacious clay, while the surface of the valley is covered with a micaceous loam readily dissolving into an almost impalpable powder. Near by are no traces of pits or excavations. Nor are there indications that any earth was scraped up around the base. These facts afforded confirmation of the statement made by the present owner of the plantation upon which these tumuli are located, that the big mound had been built with clay brought from the Carolina side of the Savannah River. There clay abounds; and we were informed that in the side of the hill immediately opposite, the excavations may still be seen whence the tough material was obtained for heaping up this mound. This tumulus is one of the finest within the limits of Georgia, and should be classed with the truncated pyramids on Tumlin's plantation in the Etowah Valley, with the largest of the East Macon mounds, and with that frustrum of a four-sided pyramid on Messier's place, in Early County.

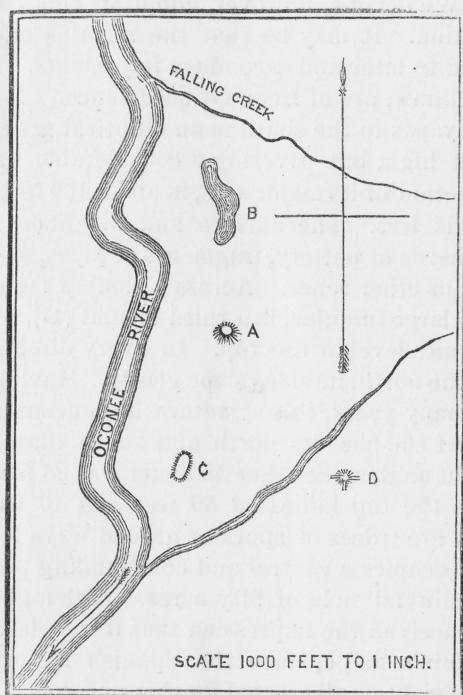
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### III.

#### ANCIENT TUMULI ON THE OCONEE RIVER.

About a mile and a half north of the Fontenoy Mills, in Greene County, Georgia, and located on the left bank of the Oconee River, are three tumuli surrounded by traces of extensive and long-continued inhumations. The largest (A) is situated rather more than 100 yards east of the river, and rises about 40 feet above the level of the valley. In general outline it may be described as a truncated cone. Its apex

diameters, measured north and south, and east and west, were respectively, 65 and 68 feet. At the base, however, the flanks are extended in the direction of the east and west to such a degree that there is a difference of 35 feet between the base-diameters running north and south, and east and west; the former being 133 feet and the latter 168 feet. At the center of the top may be seen a circular depression, some 20 feet wide



Ancient tumuli on the Oconee River.

and 2 feet deep. Toward the north the face of this tumulus is quite precipitous. When first observed by the European, this monument was covered with a growth of trees as dense and apparently as old as that of the circumjacent lowlands. When the neighboring fields were cleared, this mound was also denuded of its vegetation and cultivated, its rich surface yielding generous harvests both of corn and cotton. Although now overgrown with brambles and small trees, which materially retarded minute inspection, it appeared quite probable from the scars on the surface of the valley in the immediate vicinity, that some severe freshet years ago impinged upon the northern base of this mound and carried away a considerable portion of its northern flank.

Rather more than 100 yards to the north of this tumulus, and trending to the northwest, is an irregularly shaped excavation (B), at present from 10 to 15 feet deep and partially filled with water, from which the earth used in the construction of these tumuli was obtained.

As yet no attempt has been made to open the large mound, but

against its eastern face the overflowing waters of the Oconee at one time dashed, wearing it away for some distance and leaving there a perpendicular front of 10 feet or more. Here were disclosed human bones, the skeletons of dogs, and large beads made of the columns of the *Strombus gigas*. If this partial revelation be accepted as indicative of the general contents of the tumulus, it should be classed as a huge grave-mound. We decline, however, adopting this conclusion without further information. It may be that the remains and relics then unearthed belonged to later and secondary interments. Instances of this sort, as we well know, are of frequent occurrence.

Two hundred yards to the south is an elliptical grave-mound (C), not more than 4 feet high, but covering a considerable area. This structure, in the direction of its major axis, is about 150 feet long. Its minor axis is two-thirds less. The surface and neighborhood abound with human bones, sherds of pottery, fragments of pipes, shell-beads, muscle-shells, and various other relics. Across a shallow lagoon, and 250 yards southeast of the large tumulus, is a third mound (D), well preserved, 10 feet high, and quite level at the top. In every direction, except where it looks toward the north, its sides slope gently. Having been constantly cultivated for many years, this structure has encountered no inconsiderable waste. At the base its north and south diameter was 100 feet. Measured at right angles, the other diameter was 88 feet. Similar measurements across the top indicated 50 feet and 40 feet. To the east, west, and south, are traces of spurs or graded ways for easy ascent.

This mound occupies a central and commanding position in the middle of a fertile alluvial field of fifty acres. Although its contents are unknown, we conceived the impression that it was designed as an elevation for a chieftain's lodge, since the Spanish historians mention the existence of artificial tumuli erected for this purpose. Around the base, and for a considerable distance on every hand, are traces of primitive occupancy, all persuading us of the fact that, in former times, this tumulus was surrounded by the dwellings of people who had here fixed their home.

The space adjacent to the large tumulus (A), to the extent of some four acres, appears to have been largely, if not exclusively, dedicated to the purposes of sepulture. Every freshet which sweeps over this area uncovers human skeletons, disposed in every direction only a few feet below the surface. So thoroughly and frequently has this territory been torn by freshets that it has lost its original level, and now exhibits on every hand heaps of broken pottery, quantities of human bones, and fragments of various articles of use, sport, and ornament. The freshet of 1840 was the first, so far as we can learn, which in a marked manner invaded the precincts of this ancient burial ground. Upon the subsidence of the waters many were attracted to the spot by the multitude of terra-cotta vessels, human bones, shell-beads, pipes, discoidal stones, grooved axes, celts, and other objects of primitive manufacture. One

gentleman collected nearly a quart of pearls which had been perforated and worn as beads. The plantation negroes supplied themselves with clay pipes then unearthed. In the possession of not a few of them were seen strong clay vessels, thence obtained, which they used for boiling soap. Large calumets and other objects of special interest were secured by the curious and carried to their homes, where, for a season, they formed matter for speculation and idle talk, and in the end were either lost or broken. Subsequent inundations have brought to light similar proofs of sepulture and early manufacture, but this treasure-house has been so often visited and so carefully searched that its present yield falls far short of that which was encountered when the Harrison freshet invaded this place of the dead.

It is a sad fact that the denudation of the banks of these southern streams and the destruction of extensive forests in reducing wild lands to a state of cultivation have proved the proximate causes of serious injury to, and often of the total demolition of, many prominent and interesting aboriginal structures.

On the right bank of the Oconee River, about a mile and a half above its confluence with the Appalachee River, situated in the low grounds of the plantation of Mr. Thomas P. Saffold, is a circular earth mound some 20 feet high, covering about the eighth of an acre. The sides are sloping, as in the case of other conical mounds along the line of this river, but the peculiarity which distinguishes it from its companions is that around the apex stout earth walls were raised to the height of several feet, thus causing a depressed or guarded top.

Near the banks of the Appalachee River, in Morgan County, may still be seen occasional artificial pits, some 4 feet in depth and 6 feet or more in diameter. Upon removing the *débris* of leaves and earth with which they are filled, their bottoms and sides indicate the influence of long-continued and intense fires. Fragments of pottery also occur in them. It would seem that they constituted a sort of rude oven in which the Indians baked their clay vessels.

We might multiply instances of tumuli still extant in the valleys of the Oconee and its tributaries, but having already described and figured those in East Macon and its vicinity,\* enough has probably been said to convey an intelligent idea of the aboriginal monuments of this section.

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\*Antiquities of the Southern Indians, &c., p. 158 *et seq.*, New York, 1873.



ON A  
POLYCHROME BEAD

FROM

FLORIDA.

BY

S. S. HALDEMAN.

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REPRINTED FROM THE SMITHSONIAN REPORT FOR 1877.

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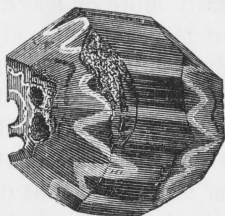


# ON A POLYCHROME BEAD FROM FLORIDA.

BY PROF. S. S. HALDEMAN.

This bead (Fig. 1), now in the United States National Museum, is of a kind known to archæology as the star pattern, because the white between the exterior blue and inner red forms a terminal star or zigzag band when the original cylinder is ground into an oval so as to expose the interior colors. Examples occur of various sizes from about two inches in length and one and a half in diameter to about one-fourth of an inch in size, the latter being spheric or oblate and as distinctly

Fig. 1.



29880.

(1)

colored as the large ones. There is a specimen about an inch and a half long in the ancient Egyptian department of the Louvre (horizontal case Q), and, according to my recollection, a specimen from Dakkeh (Nubia) in the British Museum (horizontal case E, No. 6294 d) is larger. The Slade collection in the British Museum contains two of the same character.\* A large one found in England with Samian cups and Roman buckles is figured in the *Proceed. Brit. Archæol. Assoc.* 1848, vol. 3, p. 328; Faussett† figures an example from Gilton, England; and another is described in the *Archæologia* (1851, vol. 35, pl. 5, fig. 10), the locality unknown, but Mr. B. Nightingale says examples occur along the Rhine and are to be seen in the museums of Mannheim and Baden. Mr. Morlot, of Lausanne, gives colored figures of two examples in the museum at Copenhagen.‡ That of fig. 1 was said to have been found near Stockholm, the other in an antique grave in

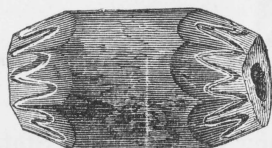
\* Catalogue of the collection of glass formed by Felix Slade, esq., F. S. A., with notes on the history of glass-making, by Alexander Nesbitt, esq., 1871, p. 10, fig. 21.

† *Inventorium Sepulchrale*, 1866, pl. 5, fig. 2.

‡ *Proceed. Am. Philosoph. Soc.*, Nov., 1862, p. 111-114 and 119-120.

Denmark. He also copies (fig. 3) one of Schoolcraft's figures of a smaller cylindric bead from the ossuaries at Beverly, Canada. Somewhat similar to the Stockholm specimen is a bead in the National Museum (Fig. 2) from Santa Barbara, Cal., in which the exterior blue is

Fig. 2.



15193.

(A)  
(1)

minutely and thickly speckled with yellowish points. The same collection has examples of the small spherical kind from graves at Lima, N. Y.; and I have a specimen found on the Susquehanna, with other remains, in digging the Pennsylvania canal, about the year 1830.\*

The exterior blue is usually more or less clearly striped with a lighter tint, owing to the ridges of the interior white shining through. In all the specimens, and in such as I have seen in Europe, the order of the colors toward the interior is blue-white-red-white, with an additional central color in some of the larger ones, that of the large Louvre example being dark blue. This order is present in modern Venetian beads, of which I have examples much like that of Santa Barbara, Cal., and in those from New York and the Susquehanna, but the last two are more neatly made, the white, wavy band in the Susquehanna specimen being very slender, delicate, and regular. The external tint of the modern Venetian cylindric beads is blue, green, red, or longitudinally striped with several colors, and the Louvre has blue and also green ancient Egyptian specimens.

Mr. Morlot's paper is intended to show that the Northmen received these beads from the Phœnicians and carried them to America, a view which is opposed by Mr. A. W. Franks, F. S. A., of the British Museum, who thinks that the Beverly specimen figured by Schoolcraft is Venetian of the fifteenth or sixteenth century,† a view which is probably correct for all the North American examples. Of these, the New York specimens show signs of oxidation, while that from the Susquehanna is untarnished.

\* Proceed. Am. Phil. Soc., May, 1869, vol. 11, p. 369. Mr. Thos. Masterson, of Columbia, Pa., has added to my cabinet a fine specimen, but little tarnished, from a grave in Tioga County, Pa., and he has the longitudinal half of another,  $1\frac{1}{8}$  inch long and  $1\frac{1}{16}$  in diameter, found at Turkey Hill, below Columbia, Pa.

† Proceedings of the Society of Antiquaries, January 28, 1864. Lubbock, Prehistoric Times, ch. 3. I am indebted to the kindness of Mr. Franks for valuable ancient and modern additions to my cabinet of beads.

And yet, the manufacture of the star pattern and other kinds of beads in glass and enamel, with varicolored spots and circles, is of great antiquity. The art seems never to have been lost, and in later times to have been chiefly cultivated at Venice, where more than five hundred varieties are made. A local historian, Mr. Samuel Evans, of Columbia, Pa., says the natives along the Susquehanna traded with the French for fire-arms before 1608, and he mentions a trading-post at the mouth of the river, established in 1631 by a person named Claibourne.\* Charles C. Jones † mentions that De Soto found European beads in possession of the natives as early as 1540, and they seem to have been valuable articles of trade at various periods and among many nations. They are abundant in European mounds, where they occur in various shapes and variegations of color, as may be observed in works devoted to antiquities.‡ The magnificent Cesnola collection in New York has varicolored examples from Cyprus. The Kertch example (*Archæologia*, 34, pl. 5, f. 20) is blue with white circles. The same tints occur on Egyptian beads in the Louvre, and on Phœnicic-Greek specimens in the Liverpool Museum. The British Museum has beads from Tyre of a dark ground, some with white circles, others with transverse zigzag bands.

A Venetian bead known as "cornaline d'Aleppo" is widely spread. It is red, with a white or yellowish center, and when strung or worked into ornaments the white is scarcely apparent, so that it might be supposed that red beads would answer as well. Possibly they are more pleasing to the eye when sold in bulk. I have specimens of it from Abyssinia, Algeria, in native work of Demerara, in a medicine-bag probably from the Rocky Mountains, in moccasins of the kind made by the Indians of New York and Canada, and Mr. W. H. Holmes of the Hayden expedition picked up a specimen near the trail in the vicinity of the ancient ruins of the Rio Mancos, in Southwest Colorado. Mr. Holmes also found a small elliptic white enamel bead among the *débris* of the ruins, but

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\* Lancaster, Pa., Express, March 8, 1876.

† Antiquities of the Southern Indians, 1873, pp. 235-237, 520.

‡ *Archæologia*, 1851, vol. 34, cuts p. 117, and pl. 5, including a Sabine example (f. 27), two from Kertch (f. 20, 21), and three from Egypt. All these are varicolored. The spheric and sulcate forms, figs. 8, 13, 15, known as "Druid's beads," occur in Egypt, and are represented in a large and varied collection of ancient Etruscan specimens which I owe to the liberality of the distinguished archæologist, Signor Alessandro Castellani. Among its representatives of the plate referred to are fig. 20 (Kertch), 23 (cylindric, Nubia), 25 (triangular, Egypt), 27 (spotted, Sabine), and 35, with colored rings.

R. C. Neville, *Saxon Obsequies*, 1852, pl. 18-22, containing several hundred figures, mostly varicolored.

John Yonge Akerman, *Remains of Pagan Saxondom*, 1855, cuts p. xxviii, and colored plates 12 and 21, with thirty or forty varieties.

Faussett (op. cit.), pl. 5, 6, 7, figures in single tint and varicolored of about two hundred examples.

Achille Deville, *Histoire de l'Art de la Verrerie dans l'Antiquité*, 1873, pl. 78-9, variegated; pl. 5, unicolored.

even this is a Venetian pattern. Among many varieties of glass beads, the Wheeler Survey has the cornaline d'Aleppo from excavations near Santa Barbara, Cal. (Dos Pueblos, Big Bonanza), also another Venetian variety with the center black instead of white. Both kinds are used by the modern Utes. It deserves mention that Professor Henry has recently procured for the Smithsonian Institution a fine collection of Venetian beads for comparison in this branch of archæology.



THE STOCK-IN-TRADE  
OF  
AN ABORIGINAL LAPIDARY.

[MISSISSIPPI.]

BY  
CHARLES RAU.

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REPRINTED FROM THE SMITHSONIAN REPORT FOR 1877.

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# THE STOCK-IN-TRADE OF AN ABORIGINAL LAPIDARY.

(Mississippi.)

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BY CHARLES RAU.

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In an essay entitled "Ancient Aboriginal Trade in North America," which was published in the Smithsonian Report for the year 1872, I attempted to trace the beginning of a division of labor among the former inhabitants of this country. I expressed the opinion that certain individuals, who were, by inclination or practice, particularly qualified for a distinct kind of manual labor, devoted themselves principally or entirely to that labor, basing my conjecture on the occurrence of manufactured articles of homogeneous character in mounds or in deposits below the surface of the soil. There is little doubt, for instance, that there were persons who devoted their time chiefly to the manufacture of stone arrow-heads and of other articles produced by chipping, among which may be mentioned those remarkable large digging tools described by me several years ago,\* and the oval or leaf-shaped implements made of the peculiar hornstone of "Flint Ridge," in Ohio. These latter, which bear much resemblance to certain palæolithic types of Europe, were first noticed by Mr. E. G. Squier, who found, many years ago, a large deposit of them in a low mound of "Clark's Work," in Ross County, Ohio. An excavation, six feet long and four feet wide, disclosed about six hundred specimens, which were standing edgewise, forming two layers, one immediately above the other. The deposit extended beyond the limits of the excavation on every side, and hence the actual number of specimens has not become known.† Since that time deposits composed of objects of corresponding shapes and of the same material have been discovered, generally under the ground, in Illinois, Wisconsin, and Kentucky; but the area of their distribution may be much greater. Dr. J. F. Snyder has described the Illinois deposits in the Smithsonian Report for 1876.‡ That of Beardstown, in Cass County, is of special interest. It contained about fifteen hundred leaf-shaped or round implements, arranged in five horizontal layers, which were separated by thin strata of clay. According to Dr. Snyder, another deposit, said to have consisted of three thousand five hundred specimens, was

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\* A Deposit of Agricultural Flint Implements in Southern Illinois, Smithsonian Report for 1868, p. 401.

† Squier and Davis: Ancient Monuments of the Mississippi Valley, Washington, 1848, p. 158; representations of the objects on p. 214.

‡ Deposits of Flint Implements, p. 433.

discovered in Fredericksville, Schuyler County, in the same State. Smaller subterranean deposits of flint arrow-heads, cutters, &c., have been met with in various States in the eastern half of this continent, the articles showing in many cases no traces of use whatever, and generally exhibiting a symmetrical order in their arrangement. Such facts naturally lead to the supposition that flint-chipping formed a special profession, and, furthermore, that the objects found in these hiding-places, or "caches", constituted the magazines of the aboriginal craftsmen. The deposit of Clark's Work, it should be stated, has been thought to owe its occurrence in a mound of peculiar structure to superstitious or religious motives, and thus to partake of a sacrificial character. This view, however, whether correct or not, has no bearing on the point in question, namely, the production of the chipped articles by way of trade.

The carved stone pipes, representing imitations of the human head, of quadrupeds, birds, &c., which were found in great number by Messrs. Squier and Davis in a mound of the group called "Mound City," not far from Chillicothe, Ohio, illustrate the highest development of early aboriginal art in this country.\* Their production required much skill and patient endurance, and hence we may infer that the manufacture of stone pipes formed in past times a branch of industry which was chiefly carried on by persons who possessed an extraordinary talent for this peculiar kind of work. There are to this day pipe-makers among the Ojibway Indians, and probably among other tribes.

In corroboration of the foregoing, I may state that certain handicrafts were practised to some extent by the North American Indians at the time of their first intercourse with the whites. "They have some," says Roger Williams, "who follow onely making of Bowes, some Arrowes, some Dishes (and the women make all their Earthen Vessells), some follow fishing, some hunting: most on the Sea side make Money, and Store up shells in Summer against Winter whereof to make their money."† These remarks, of course, relate to the New England tribes, with whom Roger Williams used to associate; but a later writer, Lawson, gives a similar account of the Southern Indians, among whom labor was doubtless still more systematized, considering that they had attained a somewhat higher degree of civilization than their Northern kinsmen. It is known that until within late years the manufacture of arrow-heads was practised as a profession by certain individuals among several Indian tribes.

I will now proceed to describe a deposit of aboriginal manufactures, which illustrates the subject of division of labor among the earlier inhabitants of this country better than any other discovery of kindred character with which I have become acquainted.

In the spring of 1876, Mr. T. J. R. Keenan, of Brookhaven, Lincoln County, Mississippi, presented to the National Museum a collection of

\* Ancient Monuments, &c., p. 242, &c.

† A Key into the Language of America (London, 1643); Providence, 1827; p. 133.

jasper ornaments, mostly unfinished, which had been found in Lawrence County, in the same State, forming a deposit of a very remarkable character. Being desirous of learning the particulars of this discovery, I addressed a letter to Mr. Keenan, and obtained from him the desired information. The deposit was accidentally discovered on the farm of Anthony Hutchins, situated on the east side of Silver Creek, about one mile distant from Hebron church, in the northeastern part of the above-named county. While Mr. Hutchins's son was engaged one day in July, 1875, in ploughing a cotton-field, entirely free from pebbles and stones of any kind, a grating of the ploughshare attracted his attention, and upon examination he found that he had struck the deposit, which appeared originally to have been buried two feet and a half below the surface, filling an excavation of about eighteen inches in diameter. The arrangement of the articles constituting this deposit will be described hereafter. They all consist of jasper of a red or reddish color, which is sometimes variegated with spots or streaks of a pale yellow. But few of these objects, which were undoubtedly designed for ornament, may be considered as entirely finished.

The following is an inventory of the specimens sent to the National Museum by Mr. Keenan:

1. Twenty-two pebbles of jasper, showing no work whatever. They are irregular in shape and mostly small, being from half an inch to an inch and one-fourth in size.

2. Twelve rudimentary ornaments of different forms, brought into shape by chipping.

3. Three polished pieces with narrow grooves, showing that cutting was also resorted to in the manufacture of the objects.

4. Two hundred and ninety-five beads of more or less elongated cylindrical shape, measuring from one-fourth of an inch to three inches in length, and from one-fourth of an inch to one inch in thickness. Though they are polished, they exhibit but rarely a perfectly regular cylinder form. Ten of them show the beginnings of holes, in most cases at one end.

5. One hundred and one round beads of a more compressed or discoidal shape. They are from one-eighth to five-eighths of an inch long, while their diameters vary from one-fourth to three-fourths of an inch. They are polished, and only five of the number exhibit incipient holes.

6. Nine polished ornaments of elongated flattish shape, showing an expansion on each side (like Fig. 10). They measure from an inch and one-fourth to two inches and one-fourth in length, and from three-fourths of an inch to an inch and one-fourth in width across the middle. One specimen is partly drilled.

7. Two specimens of similar character, but expanding on one side only (Fig. 11). They are from an inch and a half to two inches in length and seven-eighths of an inch wide across the middle.

8. One large ornament showing two expansions on each side (Fig. 12). A more minute description will follow.

9. Two small animal-shaped objects. They are about an inch long and well polished.

10. Two semicircular polished pieces, probably designed to be worked into the shapes of animals.

There are four hundred and forty-nine pieces in all. Mr. Keenan has kept for himself sixteen specimens, and four had been disposed of before he became the owner of the collection. One of the latter was drilled entirely through. Hence the entire deposit consisted of four hundred and sixty-nine objects.

From the character of the inventory just given several inferences may be drawn.

There can hardly be any doubt that the deposit constituted the stock-in-trade of some aboriginal manufacturer of ornaments of jasper, which he made from pebbles of that material.\* He shaped them by the operation of chipping before he proceeded to grinding, and he likewise applied the method of cutting in the manufacture of the articles. The cutting, however, was done after the piece had been reduced to a certain shape by grinding. The drilling of the beads and bead-like ornaments was the final process in their fabrication. This fact affords an additional proof that in this country stone objects requiring perforations were brought into perfect shape before the drilling was commenced. The same rule prevailed in Europe, as every one knows who has studied the stone antiquities of that part of the world.

The accompanying illustrations represent, in full size, typical specimens of the different classes of wrought articles composing the deposit.

Fig. 1.—A jasper pebble, chipped into the form of a cylindrical bead. The smooth surface of the pebble has not entirely disappeared.

Fig. 2.—A long, comparatively slender piece, designed for a bead. It shows the chipping very distinctly, though the sharp edges have been removed by grinding.

Fig. 3.—Polished cylindrical† bead (undrilled).

Fig. 4.—Very regular and well polished cylindrical bead of a fine red color (undrilled).

Fig. 5.—Long and slender bead, apparently not entirely ground into shape (undrilled).

Fig. 6.—Large cylindrical bead, which exhibits a rather rough surface, the traces of chipping not having been entirely removed by the grinding process (undrilled).

Fig. 7.—Small cylindrical bead, polished, but not regular in shape, and showing at one end the beginning of a hole, which forms a cylin-

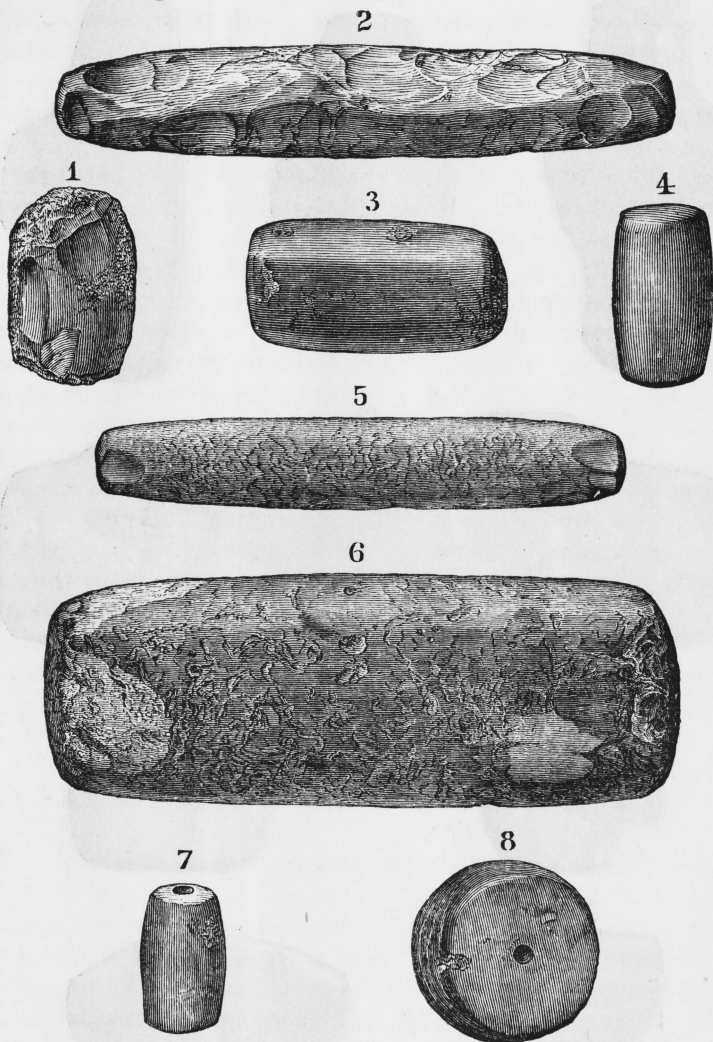
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\*According to Mr. Keenan's express statement, no jasper pebbles occur in the neighborhood of the place where the ornaments were entombed. They must have been brought from a distance.

†In this description of ornaments the term "cylindrical" must not be taken in a mathematical sense, as I merely intend to indicate by it an approximate resemblance to a cylinder.

drical cavity nearly three millimeters in diameter and two millimeters in depth.

Fig. 8.—Polished bead of discoidal shape, with incipient holes at both ends. One of the holes is merely indicated by a small depression; the other forms a cup-like cavity of two and a half millimeters diameter and two millimeters depth.



Jasper ornaments from Mississippi (}).

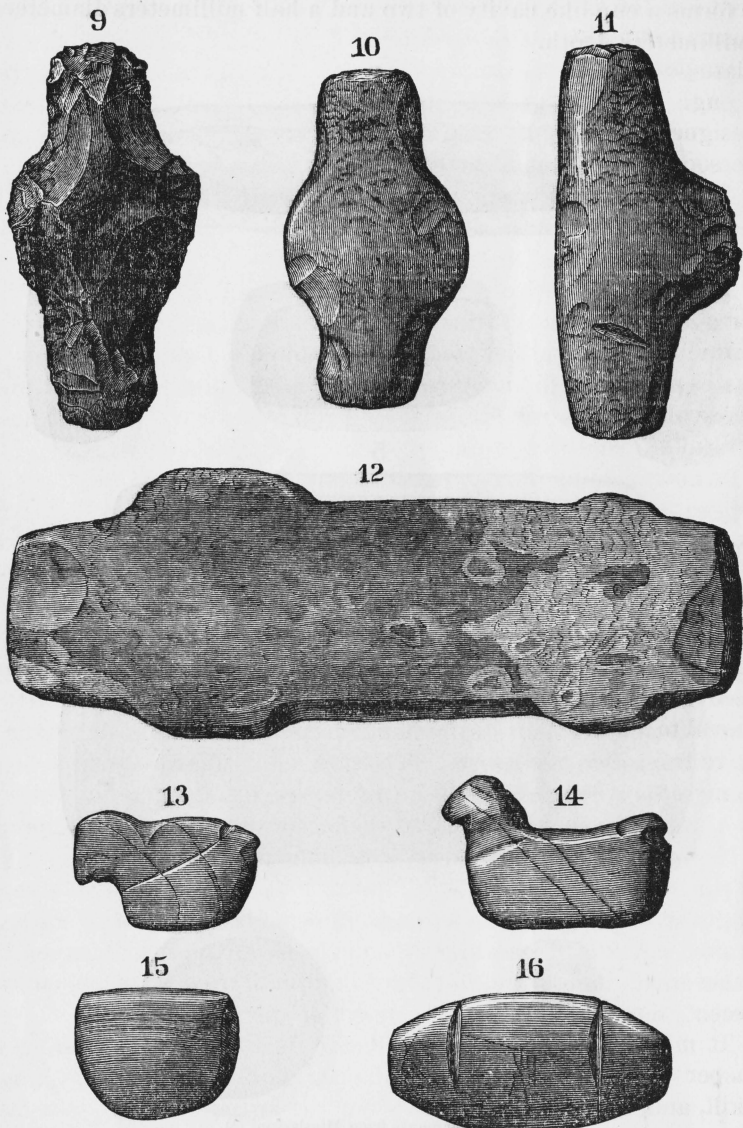
Fig. 9.—Ornament of elongated flattish shape, with an expansion on each side. It is unfinished, having been brought into shape by chipping alone.

Fig. 10.—Object of the same form; well polished, but not absolutely regular in outline. There can be no doubt that the ornaments of this description were intended to be drilled in the direction of the longitudinal



axis. A broken specimen of the collection shows the commencements of holes at both extremities.

Fig. 11.—Polished ornament of similar character, exhibiting an expansion or projection only on one side (undrilled).



Jasper ornaments from Mississippi (3).

Fig. 12.—Large polished ornament of elongated flattish form, with two expansions on each side. The object is irregular in outline, the expansions being larger at one extremity than at the other. It is three-fourths of an inch thick in the middle. A longitudinal perforation was doubtless intended.

Fig. 13.—A small, flattish, bird-shaped object, made of beautiful cherry-red jasper, and well polished. The wings are indicated on both sides by slight grooves.

Fig. 14.—A similar polished object of dark-red jasper, in which the bird form is less distinctly expressed. Indeed, the maker may have purposed to represent some quadruped. It would be unprofitable to speculate on the use of these two carvings. They probably were merely toys, though it is not impossible that they had a totemic significance, or were designed to serve as charms. They could not well be worn about the person, and I doubt whether it was intended to perforate them.

Fig. 15.—A polished semicircular piece, perhaps designed to be worked into the shape of a bird; its size is exactly the same as that of the original of Fig. 13.

Fig. 16.—A polished piece, of a compressed oval shape, showing two parallel incisions in the direction of the minor axis. They were evidently made with a sharp flint tool. It is probable that this specimen illustrates a stage in the manufacture of a small animal-shaped trinket, like those already described, the piece being almost too flat to be made into a bead of cylindrical form.

It now remains to be stated in what manner the objects forming the deposit were arranged. The large piece, represented by Fig. 12, lay flat on the bottom of the hole; the long and massive cylindrical beads were placed on end, on and around it, as closely as possible, and the smaller objects were spread over them in a rather promiscuous way.

The owner of the articles here described, we may suppose, had no intention of leaving them buried in the ground; he would some day have recovered them, had circumstances permitted. Death, captivity, or removal to another part of the country, from which he never returned, may have frustrated his design. The deposit in question shared the fate of many others which have been preserved to our time, in order to add, as it were, to our knowledge of the former occupants of this country.

It would be a vain endeavor to offer any conjecture as to the age of the deposit. The objects appear absolutely fresh, not showing the slightest alteration of the surface. Jasper, however, is a very hard substance, capable of resisting the influences of exposure for ages. On the other hand, there is nothing that would militate against a comparatively recent, though pre-Columbian, origin of the deposit.

It must have been a very difficult task to work a stone as hard as jasper without the proper appliances, and we cannot but admire the skill, and, above all, the patience of the artist or artists who fashioned the ornaments from such an obdurate material. Yet it is known that even at the present time mineral substances of equal hardness are shaped and perforated in the most primitive manner by tribes occupying a very low position in other respects. The execution of such work is but a trial of endurance, a quality displayed in an eminent degree by uncivilized man when his mind is bent upon a definite purpose.





*John T. Short Esq.  
for Stephen Salisbury Jr.  
Treasurer. Mass. Tr. S. A.*

# Vortrag

über den

## Mexicanischen Kalender-Stein,

gehalten von

**Prof. PH. VALENTINI,**

am 30. April 1878,

IN REPUBLICAN HALL,

vor dem

**Deutsch ges. wissenschaftlichen Verein.**

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NEW YORK.

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*Vorsitzender: Prof. CHARLES SCHLEGEL.*

*M. H.*

Sie wollen so freundlich sein, am heutigen Abend Ihre Aufmerksamkeit einem Vortrage zuzuwenden, den ich, obwohl kein Mitglied dieses Vereins, doch artig genug vor Ihrer Versammlung zu halten aufgefordert worden bin.

Der Vortrag wird sich über gewisse Studien verbreiten, die ich seit längerer Zeit den s. g. mexicanischen Hieroglyphen, besonders aber einem Monuments gewidmet habe, das unter dem Namen des Mexicanischen Calendarsteins bekannt ist.

Mein Bericht über die Veranlassung, welcher dies Monument altmexicanischer Kunst seine Entstehung verdankt—ferner, die Auseinandersetzung des Gegenstandes, ich möchte sagen Thema's, das sich der Künstler auf ihm darzustellen vorgenommen,—die Beschreibung und Bedeutung der vorkommenden hieroglyphischen Symbole im Einzelnen und deren Zusammenwirken zu einem harmonischen Ganzen,—schliesslich auch die Vorlegung der Mittel, durch welche eine Entzifferung derselben möglich wird—Alles das wird Ihre Geduld und Zeit in Anspruch nehmen. Wir werden aber dann auf diesem etwas umständlichen Wege zu einem interessanten Resultate gelangt sein. Es wird sich herausstellen, dass dieser sogenannte Calendar-Stein nicht wie bisher immer geglaubt, den Mexicanern zu hoch wissenschaftlichen, nemlich astronomischen Zwecken, sondern zu höchst profanen gedient habe: zur Hinschlachtung von Menschenopfern, mit deren Blute sie den Zorn ihrer Götzen zu beschwichtigen glaubten. Die reichen Sculpturen, mit denen die Scheibe bedeckt ist, wird sich herausstellen, dass sie keine Hieroglyphen für „die Tage des Durchgangs der Sonne durch den Zenith der Stadt Mexico, durch die Aequinoctical und Solstitialpunkte“ aufweisen. Wohl aber werde ich vor Ihnen klar entwickeln können, dass es dem Künstler gelungen in diesen Sculpturen ein höchst abstractes Thema zur sinnlichsten Anschauung zu bringen, nemlich das von

„Zeiteintheilung“ und zwar gerade das der so höchst eigenthümlichen Zeiteintheilung wie sie unter den Völkern von *A n a h u a c* vor der spanischen Eroberung gebräuchlich war.

Solchergestalt habe ich Sie also mit Inhalt meines heut abendlich zu haltenden Vortrags bekannt gemacht.

In einem Vortrage, der altmexicanische *C u l t u r* und *C i v i l i s a t i o n* so eng berührt, könnte die Unterlassung des Abrollens eines Bildes desselben stark vermisst werden. Bei dem grossen Drange der Zeit muss ich von solchem Beginnen absehen. Ich muss an Ihr Gedächtniss, Ihre Erinnerung aus der *Lectüre* der *Conquista*, an die Eindrücke alle appelliren, die Sie aus so vielen Ihnen zu Gesicht gekommenen *Curiositäten*, *Antiquitäten* und *Bildern* der mexicanischen *Altwelt* davon getragen und vielleicht auch festgehalten haben. Da ich aber von der Erklärung eines *Monuments* gesprochen habe, auf welchem die Zeiteintheilung dieser Nation eingegraben sein soll, und da diese Darstellung und Form von hieroglyphischen Symbolen gegeben ist, so habe ich zu Nutzen des allgemeinen Verständnisses einige Bemerkungen über diese eigenthümliche Schriftweise vorausszuschicken.

Es handelt sich bei den mexicanischen Hieroglyphen nicht wie bei den ägyptischen und assyrischen um eine *Lautschrift*. Sehen Sie auf einem mexicanischen Bilderblatte, auf irgend einer *Sculptur* eine Gruppe zusammenhängender unter sich verschiedener Schnörkel, von Thieren und von Menschenköpfen, von Blumen und so weiter, und sehen Sie diese Gruppe festgesetzt entweder in einer horizontalen oder vertikalen Reihe, so wollen Sie ja nicht glauben, dass etwa ein jeder Schnörkel in einer Gruppe einen Buchstaben, die Gruppe selber ein Wort, und die Aneinanderreihung mehrerer oder vieler solcher Gruppen einen Satz bedeute, dessen Sinn mit Hilfe eines Alphabetschlüssels herausbuchstabirt werden könne. Die Mexicaner besaßen eine Sprache, hochgebildet wie nur eine sein kann; sie hatten Ausdrücke für jegliche concrete, für jegliche abstracte Anschauung, und in den wunderbar feinsten, gefühl- und gedankenreichsten Nüancirungen, aber, die Töne unserer menschlichen Stimme nach einer Unterscheidungsform in Vokale und Consonanten abzusondern,

und jeden einzelnen desselben durch ein conventionelles Zeichen, Symbol, Buchstaben zu fixiren, und mit diesen Buchstaben alsdann das getönte Wort, ein Lautsymbol just nach dem andern gestellt, wie wir es doch bei dem Schreiben thun, hinzumalen—dieser Kunstgriff war ihnen fremd. Dem ist dies neuerdings widersprochen worden. Man will ein sogenanntes yukatesisches Alphabet aufgefunden haben. Man hat ein yukatesisches Bilderbuch, den sogenannten Codex Tro danach interpretirt. Glorreicher Unsinn ist natürlich danach zu Tage gekommen. Der Codex soll die Darstellung der Yukateken „von der Gletscherperiode, von dem allmäligen Auftauchen des Kranzes der Antillen und ähnliche antediluvianische Thorheiten mehr enthalten. Das besagte yukatekische Alphabet ist aber weiter nichts, als der Versuch eines Missionsbischofs, D. deLanda, den Eingebornen ihre eigene Sprache, phonetisch, nach unserer Weise, aber mit von ihnen abgeborgten Symbolen schreiben zu lehren. Ich gehe nicht weiter auf diesen Gegenstand ein, bin aber erbötig, auf Wunsch später nähere Auskunft zu ertheilen.

Die Mexicaner handhabten also keine phonetische, wol aber eine ausdrucksvolle Bilderschrift. Hatten sie sich etwas mitzutheilen, so ergriffen sie Pinsel und Farbe und malten das Ereigniss in seinen charakteristischen Pointen auf Papier. Bei solchen Darstellungen hatte die Phantasie des Malenden natürlich einen weiten Spielraum. Verschiedene Maler würden dasselbe Ereigniss verschieden dargesellt haben. Aber dies hatte seine Grenzen. In der Wiedergabe der vielen alltäglich wiederkehrenden menschlichen Handlungen banden sie sich an eine ganz bestimmt conventionell bleibende Form. Wollten sie also z. B. gehen darstellen, so finden wir immer Fusstapfen, die von einer Person bis zur andern oder bis zu einem Hause reichen. Handelt es sich um sprechen—aus dem Munde jeder sprechenden Person fliegt eine immer in derselben Form gezeichnete Flocke, der Hauch; wenn singen, so war die Flocke grösser, länger, und in gewisse Tacte abgetheilt. War von einer bestimmten Persönlichkeit die Rede, und hiess der Mann z. B. Schwarzfuss, so malten sie ihm zu Häupten seinen Hieroglyphennamen als einen Fuss mit schwarzen Flecken betupft; hiess er Wassernase—dann

ein Gesicht über welches hinweg ein kleiner Strom von blauem Wasser fließt. Ward die Eroberung einer Stadt in die Annalen eingetragen, so ist das typische Eroberungsbild ein Haus, unter dessem stürzenden Dache eine dreigezackte Flamme angebracht ist. Um nun aber zu wissen um welche Stadt es sich handelt, ward ihr Wappen dabei gemalt. Dieses Wappen stellt bildlich ihren Namen dar, und dieser Name rührte immer von irgend einer Eigenthümlichkeit her, die ihr durch ihre Localität oder irgend einem andern Umstand gegeben worden war. Die meisten Städte lagen, um sich gegen Ueberschwemmung und gegen den Wind zu schützen, an Berge gelehnt. Daher so viele Städtenamen mit der Endung *tepeque*, ein Wort das Berg bedeutet. Wuchsen auf dem Berge viele Zapotebäume, und ward sie deshalb *Zapotepeque* genannt, so ist ihr Wappen ein Berg mit einem Zapotenbaum darin gezeichnet; wurden viele Wachteln auf ihm gefangen, so hatte es den Kopf einer Wachtel darin, und dieses Wappenbild ward dann neben das zerstörte Haus gezeichnet.

Diese kurzen Andeutungen werden genügen, um zu verstehen, dass die sogenannten mexicanischen Hieroglyphen weiter nichts sind als Zeichnungen oder Malereien von wirklichen aus der Natur direct genommenen Gegenständen, oder, waren diese in Gruppen dargestellt, von Scenen und Ereignissen aus dem socialen und geschichtlichen Leben.

Zum Verständniss dieser mexicanischen Bilder zu gelangen, würde uns daher ebensowenig Schwierigkeiten bereiten, als hätten wir einen unserer gewöhnlichen Bilderbogen vor uns, oder irgend eine aus einem Buche herausgerissene Illustration, aus deren Ensemble wir den zu ihr gehörigen Text zu errathen hätten. Die Schwierigkeiten ihres Verständnisses sind aber folgende. Gleich beim ersten Anblick fühlt sich unser heut sehr verwöhntes Auge frappirt, ja etwas beleidigt. Der Grund ist der: Die mexicanischen Maler zeichneten nicht etwa wie heut zu Tage der gelernte Künstler. Sie zeichneten so zu sagen, wie ein künstlerisch hochbegabtes, noch von keinem Lehrer angekränkelt Kind, nemlich: rücksichtslos auf die Vertheilung von Licht und Schatten, in reiner Contourmanier, also scharfbegrenzten Linien—dahingegen aber alle

Haupteigenschaften des Objects sehr scharf herausgehoben, oft bis zur Carrikatur vergrössert. Unser Auge verzeiht aber diese Unschönheit sehr bald. Wir finden solche Darstellungsweise zweckdienlich, denn sie lässt bei der so oft grossen Aehnlichkeit zweier Gegenstände nie den Zweifel übrig, welcher von beiden gemeint sei. Dies sei nur nebenher gesagt. Die eigentliche Schwierigkeit für die Interpretation der Bilder ist die, dass wir die dargestellten Gegenstände möglicherweise überhaupt gar nicht kennen. Wir mögen sie nicht kennen, erstens: aus dem Grunde, weil solche Gegenstände heut vollständig aus dem Gebrauch verloren sind. In diese Klasse gehören also z. B. die vielen Bilder von ihren Göttern, Göttinnen, Laren, Penaten, besonders aber die ganzen Paraphernalien ihres complizirten heidnischen Gottesdienstes. Zweitens, mögen uns die Bilder unverständlich sein, weil sie Darstellungen von Gegenständen sind, die gerade nur jenen Ländern, jener Zone, und dem daselbst so eigenthümlichen nationalen Haushalte zugehören, also etwa die Bilder gewisser tropischer Thiere und Pflanzen, ihrer Koch-, Kunst- und Arbeitsgeräthe. Wer würde z. B. in den vorher erwähnten Stadtwappen, das von *Zapotepeque* erkennen, ohne dass er auch die eigenthümliche Structur des Baumes, seines Stammes, der Blätter, Blüthen und Früchte je gesehen, oder sollte dies doch in einer modernen Abbildung der Fall gewesen sein, ihn nun auch gerade in der mexicanischen Abbildungsweise als solchen wiedererkennen? In die dritte Reihe würden die Bilder für gewisse abstracte Begriffe gehören. Wer würde, ohne dass es ihm erst gesagt worden, z. B. die Darstellung der Begriffe: Jahr, in einem zu einer Schleife gewundenen Bande oder Stricke errathen? In solchem Falle, sehen Sie, stand also das Bild nicht für den Gegenstand selber, sondern für Etwas was man sich bei ihm zu denken gewohnt hatte. Das Bild war eben nur ein Symbol. Lassen Sie diese wenigen Beispiele für gut gelten. Ich habe vorwärts zu eilen.

Zur Ueberwindung der genannten Schwierigkeiten, die uns für die Erklärung eines jeden mexicanischen Bilderblattes entgegen treten, sind uns glücklicher Weise ziemlich bedeutende Hilfsmittel gewährt. Um seinem Monarchen Carl V. ein Bild von der Geschichte des neu überwundenen Volkes,



seiner Sitten, seiner Productionskraft, der Menge seiner neuen gewonnenen Städte zu machen, berief der erste Vice-König von Mexico Mendoza ein Collegium von 3 indianischen Malern, und gab dem einen auf, die ganze politische Geschichte des mexicanischen Volkes, von ihrer Herwanderung aus dem Norden bis auf das Erhängen des letzten Königs Quauhquemotzin ganz so darzustellen, wie sie in ihren Annalen gemalt war. Der zweite hatte alle Städte, oder vielmehr die Stadtbilder zu malen und bei jedem derselben, die Bilder der Producte, die aus jenen nach der Hauptstadt als halbjährliche Tribut eingesandt worden waren. Des dritten Aufgabe war: die Erziehungsmethode der Mexicaner darzustellen, was mit dem männlichen wie weiblichen Kinde durch 15 Jahre seines ersten Lebens in jedem einzelnen Jahre vorgenommen wurde, um den einen zu einem guten Handwerker oder Krieger, die andere zu einer künftigen Hausfrau zu bilden. Zu jedem dieser drei Bilderhefte wurde ein allgemein gehaltener Text geschrieben. Wir haben also in diesem sogenannten Mendoza Codex eine politische, eine ökonomisch-statistische und eine sociale Geschichte dieser Nation bewahrt erhalten. Das Wichtige aber war, dass auch Sorge getragen ward, zu jedem einzeln hingemalten Bilde (und es sind deren nahe an tausend) eine specielle Erklärung hinzuzufügen. Wir besitzen demnach nahe an tausend Erklärungen von mexicanischen Gegenständen, gerade wie sie auf mexicanische Weise gezeichnet oder gemalt wurden; und, da alle diese Gegenstände der politisch socialen und statistischen Lebenssphäre angehören, dürfen wir sicher sein, dieselben mehr oder weniger, immer wieder auf jedem ihrer gemalten Bilderbögen wiederfinden. Ihre Wiedererkennung wird um so leichter, als an den einmal angenommenen Contouren, an Form und Farbe niemals von den Künstlern eine Aenderung vorgenommen wird. Wir besitzen noch eine andere authentische Quelle für die Interpretation mexicanischer Hieroglyphenbilder, und zwar in dem sogenannten Codex Vaticanus. Irgend ein neu mexicanischer Magnat der Kirche liess, so wie Mendoza für den Kaiser, so er ein Bilderbüchlein für Pabst malen. Der Inhalt dieses Codex Vaticanus ist Darstellung der mexicanischen Cosmogonie, ihrer Mythologie, ihres Calenders. Er



ist in prächtigeren Farben als der vorige gemalt, und ebenso ist jedes einzelne Bild mit einer besonderen Interpretation versehen worden. Somit besitzen wir, gerade aus den ersten Zeiten der spanischen Eroberung, wo also noch eine ganze Generation mexicanischer eingeborener Maler am Leben war, einen recht authentischen Schlüssel für das Verständniss der conventionellen Darstellungsweise ihrer Objecte sowohl als ihrer Symbole für abstracte Begriffe.

Ausser diesen s. g. officellen Interpretationen existiren nun auch viele private. Spätere Archaeologen von mexicanisch spanischer Abkunft, Sammler, Liebhaber, haben in diesem Fache theilweise recht vorzügliche Arbeiten geliefert und Sinn und Bedeutung einer Menge von Figuren endgültig festgestellt. Ich habe Ihnen somit die Hauptquellen für das Studium und das Verständniss der mexicanischen Hieroglyphen skizzirt. Viel bleibt noch hierüber zu sagen übrig. Selbstverständlich wird ein Verständniss derselben und die Auflösung irgend eines Bildproblems nie glücken—ohne ein vollständiges Vertrautsein mit der politischen Geschichte dieses Volkes, ihrer Mythologie, ohne eine gründliche Lectüre aller spanischen Chronisten und besonders der Originalberichte der ersten Missionäre, deren Hauptzweck, die Bekehrung der Eingebornen, in erster Instanz ja nur dadurch erreicht werden konnte, dass sie sich zu erlernen bemühten, wie sich ihre Beichtkinder sprachlich und auch bildschriftlich auszudrücken gewohnt waren. Gezeichnet haben diese Missionäre kein Bild, wenigstens nicht dass wir es wüssten. Aber ihre Beschreibung von den neuen, seltsamen Gegenständen, die ihnen vor die erstaunten Augen traten, diese Beschreibungen mögen auch eine Quelle für Verständniss der Bilder genannt werden. Denn sie sind oft so treffend, dass man zu solchem Texte häufig unerwartet, das entsprechende Bild irgend wo auf einer Sculptur oder einem gemalten Blatte wiederzufinden im Stande ist.

Nach dieser summarischen Angabe, was mexicanische Hieroglyphen eigentlich sind, und wo wir uns nach den Quellen für ihre Interpretation umzusehen haben, erlauben Sie mir jetzt, gleichsam als eine Probe für meine Behauptung, solch ein mexicanisches Bilderproblem mit Ihnen zusammen practisch

zu lösen. Wie schon erwähnt, soll dies an keinem gemalten Bilde, wol aber an einer Sculptur geschehen, deren Reichhaltigkeit uns eine Fülle zu untersuchenden Stoffes darbietet. Ich werde Ihnen zuerst im kurzen mittheilen, in welchem Jahre, in wessen Auftrage, zu welcher besonderen festlichen Gelegenheit diese Steinscheibe gefertigt worden, wo sie dann vergraben, dann wiedergefunden und wiederausgestellt worden ist; wofür man sie gehalten, was man aus ihr heraus, was man in sie hinein interpretirt hat. (Aufrollen der Leinwand) Das Bild, das Sie hier sehen, ist eine genaue Copie nach der besten Originalphotographie, die von dem mexicanischen Calenderstein vorhanden ist.

Die Scheibe, die Sie hier sehen, ist in Natur aus einer enormen Porphy-Basaltplatte herausgearbeitet. Sie steht aus der Fläche der Platte hervor in einem Relief von 9 Zoll. Der Durchmesser beträgt 11 Fuss 8 Zoll. Ich habe die Copie, der besseren Handlichkeit halber, mit nur einem Durchmesser von 6 Fuss 6 Zoll gefertigt.

Es war nach unserer Zeitrechnung um das Jahr 1478, also gerade vor 400 Jahren, und nur zwei Jahre vor dem Tode des damals in der Stadt Mexico regirenden Königs Axayacatl, dass dieser letztere von dem Oberpriester des Staates an ein Gelübde erinnert wurde, welches er diesem einst geleistet. Er sprach in folgenden Worten, (und gebe ich den langen Text des berichterstattenden indianischen Schriftstellers Tezozomoc in gedrängtem Auszuge:) „Der Bau der grossen Opferstätte, der Pyramide, den Du unternommen, naht sich seinem Ende. Du wolltest ihn mit einem prächtigen Werke zieren, an dem Huitzilopochtli, der Ernährer der Menschen, seine Freude haben sollte. Die Zeit drängt; säume mit dem Werke nicht zu lange.“ „Ich denke“, sprach der König, „den Opferstein, den einst mein Vater dem Gotte der Sonne gewidmet, durch einen neuen zu ersetzen. Lass jenen bei Seite bringen, aber sorgsam aufbewahren. Lebensmittel und Kleider will ich den Werkleuten geben, dass sie aus den Brüchen einen passenden Stein aussuchen, und Gold, Kakao und bunte Stoffe will ich dem Bildner schenken, dass er auf ihm das Bild der Sonne eingrabe, wie sie umgeben ist von allen unsern andern grossen Göttern.“ So gingen die Werkleute aus und brachen den

Stein. Auf Rollen gelegt wälzten ihn wol 50,000 starke Männer einher. Als er aber auf die Brücke von Xoloc gelangte, gaben deren Balken nach, sie brach in Stücke, und der Stein fiel in das Wasser, und Niemand getraute sich ihn von dem Grunde des See's wieder heraufzuholen. Da ergrimmte der König, und sprach: „Man baue eine neue Brücke mit doppelten Balken und Planken, und hole aus den Brücken von Cuyoacan einen neuen Stein. Man bringe auch einen andern her, aus der ein Trog gefertigt werde, in dem das Blut sich sammle, das von dem Opfersteine für die Sühne des Gottes herabfließt.“ Nachdem alsdann die Steine gebrochen und wohlbehalten über die Brücke gerollt, da gab es ein Fest der Freude. Es folgt nun eine Beschreibung von blutigen Kampfspielen, die Belobung des Meisters, den der König in der Werkstätte aufsucht, und der Bericht, dass der Stein nach Angabe des Königs, mit dem Bilde der Sonne in der Mitte und umgeben von den andern Gottheiten, fertig geworden. Abermals wird ein blutiges Dankfest für die Vollendung gefeiert, des Troges Erwähnung gethan, der auch mit Bildern bedeckt war. Dann wird die Frage berührt, wie man den ungeheuren Stein die Pyramide hinauf bringe. Nachdem er oben ist, lesen wir, wird er in die Oberfläche eines Altars eingesenkt. Der Altar ist aus Stein gebaut, 8 Männer hoch, seine Länge 20 Ellenbogen. Vor ihm wird der Trog gestellt. Und nun folgt die Beschreibung eines blutigen Opferfestes, das zur Einweihung dieser Opferplatte abgehalten wurde, und an welchem Tausende hingeschlachtet wurden. Der König, als Hauptopferer, wird erzählt, soll am ersten Tage in eigener Person hundert von Gefangenen abgeschlachtet, von ihrem Blut getrunken und von ihrem Fleische gegessen haben. Er hat sich dabei so in Arbeit und in Essen übernommen, dass er danach krank wurde, und kurz darauf mit Tode abging. Er hatte nur noch Zeit, sich nach mexicanischer Königssitte auf den Wänden des Felsens von Chapultepeque abbilden zu lassen. So Tezozomoc's Bericht. Dass der erwähnte Opferstein mit dem Original dieser Bilder identisch ist, dafür werde ich ausser der zimlich auf ihn passenden Beschreibung nachher noch einen weiteren Beweis beibringen. (Folgt Vorzeigung des Bildes der Pyramide aus Ramusio's Sammlung.)

Der Stein wird jedenfalls zu weiteren blutigen Opferfesten bis zum Jahre 1521 gedient haben. In diesem Jahre nahmen die Spanier die Stadt Mexico ein, und Cortes liess den ganzen Pyramidenbau niederreißen, und mit seinen Trümmern die Canäle der Stadt ausfüllen. Weder Cortes, noch Bernal Diaz, noch irgend einer der berichterstattenden Eroberer thut von dem Vorhandensein eines solchen Monuments Erwähnung. Sie haben aber eine Zertrümmerung desselben nicht vorgenommen, ja es sogar auf dem Marktplatze, wo die Pyramide gestanden, zur Schau ausgestellt. So erzählt uns ein Missionär und Chronist, mit Namen Duran, zwischen den Jahren 1551 und 1569, er habe ihn immer auf dieser Stelle erblickt, und so viel sei des Sprechens von ihm unter Spaniern und Eingeborenen, gewesen, dass endlich Seine Eminenz der Bischof Montufar—Aergerniss daran genommen, und seine Vergrabung an derselben Standstelle befohlen habe, damit endlich das Andenken an die auf ihm verrichteten sündlichen Schandthaten der Welt aus den Augen geschafft würde. Bis zum Jahre 1790 thut seiner kein einziger von den vielen inzwischen auftauchenden Schriftstellern über mexicanische Alterthümer auch nur die leiseste Erwähnung. In diesem Jahre 1790 wurde eine Ausbesserung des Pflasters auf dem Marktplatz vorgenommen. Bei etwas tieferem Ausgraben stiessen die Arbeiter auf eine Steinplatte, die beim Anstossen mit dem Eisen einen so hohlen Ton von sich gab, dass man glaubte, ein Schatzgewölbe möge unter ihr verborgen sein. Als man nun die Platte aufhob, fand man kein Schatzgewölbe, wohl aber bot sich zum Erstaunen Aller auf der nunmehr freistehenden Kehrseite der Anblick dieses unvergleichlichen Schatzes altmexicanischer Kunstfertigkeit dar. Der Clerus wünschte ihn wieder eingraben zu lassen, aber der kunstsinnige und liberale Vice-König Revillagigedo gab Befehl ihn im Gegentheil zur Schau zu stellen. Er liess ihn an der Südseite der Cathedrale, in den Sockel einer ihrer Thürme, so dass jeder ihn mustern könne, einmauern. Dort ist er noch heute zu sehen.

Niemand hatte damals die leiseste Ahnung, dass ein solcher Stein je existirt und welchen Zwecken er wol gedient haben möge. Die Archaeologen erkannten sofort, er müsse mit der Sonnenzeit in Verbindung gestanden haben. Sie er-

kannten, dass das Mittelschild den alten Sonnengott darstelle, und weil man die immer wohlbekannten 20 Bilder für die Tage des mexicanischen Monats im Kreise herum eingegraben fand, gab man der Scheibe den immer noch üblichen Namen: Der Mexicanische Calenderstein.

Ein Professor der Astronomie und Mathematik D. Leon y Gama, der sich viel mit Sammlung mexicanischer Alterthümer abgegeben, auch gerade ein kleines Werk über altmexicanische Chronologie unter der Feder hatte, ward officiell aufgefordert, eine Interpretation der seltenen Hieroglyphen abzugeben. Er nahm den Auftrag an und kam nach 20 Monaten Studiums und Schreibens mit einem Werke heraus, in welchem er die sonderbare Ansicht aufstellte, die Scheibe habe den alten Mexicanern als ein astronomisches Instrument gedient. Er habe 5 Hieroglyphen auf ihr entziffert, von denen die eine die Hieroglyphe des Tages darstelle, an welchem die Sonne auf ihrem Laufe vom Norden, die andere, den Tag an welchem sie auf ihrem Laufe vom Süden zurück durch den Zenith der Hauptstadt von Mexico gehe; eine dritte und vierte Hieroglyphe bedeute die 2 Tage des Durchgangs der Sonne durch die Punkte der Tag- und Nachtgleichen, eine fünfte sei die Hieroglyphe für den Tag des Sommersolstitiums. Da diese Theorie von der Voraussetzung ausging, dass die Mexicaner mit der Kugelgestalt der Erde, unserer Eintheilung ihres Bildes in Paralele und Meridiane, unserem ganzen modernen Sonnensystem bekannt gewesen sein müssten—eine Behauptung, von deren Gegentheile wir positive Beweise besitzen,—und da ferner Gama einen Hauptbeweis schuldig blieb, nemlich die fünf genannten Hieroglyphen zu identificiren, also nachzuweisen dass sie in irgend einer Malerei oder Sculptur überhaupt vorkommen, und für diesen Fall eine authentische Interpretation derselben gegeben worden wäre, auf die er sich berufen könne, so wurde diese sonderbare astronomische Auffassung des Monuments schon sogleich nach ihrer Veröffentlichung in einem Buche von den eigenen Landsleuten heftig angegriffen, er selber zu einer öffentlichen Vertheidigung seiner Sätze von den Gelehrten der Stadt herangefordert, und da er nicht erschien, durch die öffentliche Meinung mit sammt seiner Theorie, so zu sagen



in contumaciam verurtheilt. Seine Zeichnung von der Scheibe ist ungenau, an manchen Stellen entschieden falsch, und die Beschreibung flüchtig und lückenhaft. Zwei von den auf der Scheibe gemeisselten Zonen fertigt er z. B. einfach mit der Erklärung ab, sie stellten, die eine, „die Photosphäre des Sonnenballs“ die andere „die Milchstrasse“ am nächtlichen tropischen Himmel dar. Gama ist bis heute der erste und einzige Dollmetscher dieses Monuments. Trotz des Beweismangels in seinen Behauptungen, trotz der Lächerlichkeit seiner Auffassung, wird er sowohl als auch das Monument, noch immer weiter in solchen Werken citirt, in denen es sich darum handelt, die Alt-Mexicaner als ein hoch gebildetes Culturvolk darzustellen.

Der Künstler, behauptete ich von vorn herein, hat als Musterschmuck dieser Altarplatte das Thema: „Zeiteintheilung“, gewählt. Wie er nun dies Thema, vollständig, ja sogar beinahe nur ausschliesslich in der symbolischen Kunstmanier seiner Nation auf dieser Steinscheibe ausgeführt, will ich Ihnen jetzt zu erklären versuchen, und durch, ich hoffe, durchschlagende Beweise erhärten. Ich habe Sie nur noch mit wenigen Worten mit dem Mechanismus der mexicanischen Zeiteintheilung überhaupt bekannt zu machen, so wie dieses uns durch die spanischen Missionäre und Geschichtschreiber und von allen diesen in übereinstimmender Weise überliefert worden ist.

Das mexicanische Jahr war ein Sonnenjahr von 365 Tagen. Die Sage ging, dass einer ihrer ältesten Astrologen, Cipac mit Namen, um die Tage des Sonnenjahres auf die correcte Anzahl zu bringen, einem älteren Calender von 360 Tagen die letzten 5 Tage hinzugefügt habe. Jeder Tag im Jahre hatte einen Sondernamen. Diese letzten fünf waren aber ohne Namen geblieben. Man hielt sie für leere, unglückliche, iür sogenannte *nemotemi*. Dies Jahr von 365 Tagen ward in 2 Theile getheilt. Der grössere und erste Theil des Jahres bestand aus 260 Tagen, und hiess *Meztli pohualli*, oder Mondrechnung, Mez-mond, und pohualli-Rechnung. Der kleinere letzte Theil von 100 resp. 105 Tagen ward Sonnenrechnung genannt, *Tonal-pohualli*. Ausser dieser Eintheilung des Jahres in die zwei genannten Theile, schieden sie



das Jahr zu 18 Monaten ab, gaben jedem Monat die Anzahl von 20 Tagen, und legten somit dieser Rechnung die Zahl der 360 Tage zu Grunde. Jeder Monat, von 20 Tagen, hatte noch eine Unterabtheilung von 4 Wochen, die Woche zu 5 Tagen gerechnet.

Ein gewisser Complex von Jahren, nemlich 52 Jahre, machte, was die spanischen Schriftsteller immer sehr unrichtig ein mexicanisches Jahrhundert, „un siglo“ genannt haben, aus. Jedes einzelne Jahr dieser 52jährigen Periode oder Cyclus trug einen besonderen Namen. Lief dieser Cyclus ab, so trugen die Jahre des folgenden Cyclus ganz dieselben Namen des vorigen. Schliesslich rechneten die Mexicaner auch nach Kosmogonischen Aeonen, und hatten deren vier. Die Welt war nach ihrer Tradition viermal von der Sonne zerstört und viermal von der Sonne wieder aufgebaut worden. Die erste Zerstörung war durch Krieg, die zweite durch Sturmwinde, die dritte durch Regen, die vierte durch eine allgemeine Fluth erfolgt. Die Angaben über die Dauer dieser kosmogonischen Epochen variiren. Der Name der Schöpfungsjahre ist aber immer derselbe. Sie nannten es Opfermesser oder I Tecpatl. Dies Jahr I Tecpatl bildet die Basis aller ihrer chronologischen Operationen.

Das System mexicanischer Zeiteintheilung ist mit dieser Angabe erschöpft. Lassen Sie mich nur noch Erwähnung des Tages machen, den die mexicanischen Astrologen, noch Ablauf von je 4 Jahren eingeschaltet haben sollen, um die Länge des Sonnenjahres zu einer correcteren zu machen. Diese Behauptung, nur erst durch moderne Werke verbreitet, stützt sich auch nicht auf eine einzige authentische Quelle. Kein indianischer, kein spanischer Schriftsteller, keine Malerei, keine Sculptur legt irgend wie Zeugniß von einer derartigen Interpretation ab. Die Behauptung hat also nicht einmal das Glück zu der Classe begründeter Vermuthungen zu gehören. Sie gehört zu der der gelehrten Dichtungen.

Die symbolischen Figuren für jede dieser Zeiteintheilungen werden wir nunmehr auf dieser Scheibe dargestellt finden, und zwar eingegraben auf den Zonen, von denen, wie sie sehen, die eine immer concentrisch um die andere gelegt ist.

Betrachten wir aber vorest das durch diese Zonen gebildete Mittelschild.

Aus ihm blickt ein Antlitz hervor, geschmückt mit allem erdenklichen Putze: einer Halskette, Ohringen, aus deren Mitte Federn heraushängen; an der Unterlippe wiegt ein so genannter *t e n t e t l*, Lippenstein, mit Juwelen besetzt; die Stirn ist mit einer Binde umwunden; zwei grosse Juwelen fassen auf ihr, in der Mitte, ein hieroglyphisches Symbol ein. Irre ich nicht, so ist auch das Haar als in Strähnen festgeflochten dargestellt. Zerlegen wir das kleine Stirn-Symbol, so werden wir den Namen des Sonnengottes *A t o n i a t u h* in ihm ausgedrückt finden. Hier, diese Wanne mit Wasser darin und herausspringenden Tropfen, ist das mexicanische Symbol für Wasser, oder *a t l*, in der Nahuatlsprache der Eingeborenen. Ueber diesem Wasser erhebt sich eine Scheibe, deren Rand mit 4 kleinen Kreisen besetzt ist. Dies ist die Darstellung der Sonnenscheibe, sobald diese mit anderen Gegenständen in Verbindung zu Anschauung gebracht werden sollte. Die Sonne ward schlichtweg *t o n a t i u h* genannt. Ward aber der *S o n n e n g o t t* gemeint, in der Eigenschaft als Zerstörer der Welt, und zwar als Zerstörer durch die letzte grosse Wassarfluth, so ward dies noch besonders durch ein präfigirtes *A t l* ausgedrückt, und beide Worte schmelzen zu dem einen: *A t o n i a t u h* zusammen. Nach dieser Feststellung des Namens wird es begreiflich, warum der Künstler dem Antlitz die Züge des höchsten Alters eingegraben hat. Seine Augenhöhlen sind tief eingesenkt. Tiefe Runzeln ziehen sich über Stirn und Wangen; Kinn und Kinnladen sind dürr und fleischlos. Er wollte den Gott nicht als das strahlende Gestirn, sondern als den Schöpfer, den Geber, den *T h e i l e r d e r Z e i t*, als das urälteste Wesen darstellen, das jemals existirt. Mit allen diesen seinen Symbolen der *Z e i t* werden wir ihn nunmehr auch umgeben finden.

Leicht sind die Symbole für die Tageseintheilung in die oben erwähnten 16 Stunden zu erkennen. Sinnfällig weisen die vier grossen Hauptzeiger nach dem Sonnenaufgang nach der Mittagshöhe, dem westlichen Untergang und der tiefen Mitternacht. Die Unterabtheilungen in 8 Stunden sind durch die kleineren Zeiger, die in 16 Stunden durch die

kleinen Thürmchen, in den entsprechenden Abständen angedeutet. Keines der gemalten Bilder von der Sonne (und hier ist eines) bringt die Unterabtheilung in 8 Stunden als mit kleinen Zeigern ausgedrückt; wohl aber sehen Sie die Thürmchen an deren Stelle stehen. Wir dürfen daher nicht zögern, diese als ein Symbol für Unterabtheilung in Stunden überhaupt, anzuerkennen. Sie wollen noch ferner bemerken, dass jeder dieser drei Theiler auf je einer folgenden Zone angebracht ist.—

Wenden wir uns nun zu den Symbolen für die 20 Tage des mexicanischen Monats. Sie finden sie nicht in der breiten, das Mittelschild umgebenden, sondern in der ihr folgenden schmalern Zone, die, wie Sie sehen zwanzig Häuschen zählt. Sie finden das Bild für den ersten Tag, *Cipac* genannt, hier, links von Zeigerspitze des Diadems, wie wir überhaupt die ganze Reihenfolge der Tage nach links herum finden werden. Der stachelige Kopf irgend eines nicht zu erkennenden Ungeheuers, soll jedenfalls die Priestermaske jenes Astrologen bedeuten, der der Sage nach die fünf letzten Tage der alten Sonnenrechnung von 360 Tagen zugeschaltet hatte. Sie gewährten also diesem urältesten ihre Calendarheroen die erste Stelle in der Tagesreihe. Der zweite Tag hiess *Ehec atl*, Wind, dargestellt durch einen Crocodilkopf mit geöffnetem Rachen, eine Binde auf dem Haupt liegend. Der dritte Tag hiess *Calli*, Haus; ein mexicanisches Gebäude mit flachem Söller. Boden, Hinterwand, Decke, Pfeiler, Quertragebalken sind klar wiedergegeben. Der vierte Tag *Quetzpalin*, oder Eidechse. Der fünfte *Cohuatl*, Schlange. Der sechste *Miquitzli*, Tottenkopf. Der siebente *Matzatl*, Hirsch. Der achte *Tochtli*, Kaninchen. Der neunte *Atl*, Wasser. Der zehnte *Itzcuintli* Hund. A. v. Humboldt, will ich will ich bei diesem Bilde erwähnen, spricht die Verwunderung aus, dass dieser Kopf der einzige in der ganzen Zone sei, welches sein Gesicht nach rechts gewandt halte. So hatte er ihn auf Gama's Zeichnung gesehen. Das Original zeigt ihn aber in der Stellung wie die übrigen. Der elfte Tag *Ozomatl*, Affe. Der zwölfte *Malinalli*, Schlingpflanze, ein mit dieser mexicanischen Parasite umschlungener Tottenkopf, Zierrath eines im Kriege

gefallenen Helden. Der dreizehnte Tag **A c a t l**, Rohr. Diese tropische Bambuse wächst nur an sehr feuchten Plätzen. Daher ist sie in einer Wanne stehend dargestellt; das Saamenkorn, der aus einer blätterigen Hülle hervorbrechende Keim, die Blätter selber, der Stab sind leicht zu erkennen. Der vierzehnte Tag **T e c u a n**, Tieger. Der fünfzehnte **C o z c a q u a u h t l i**, Königsgeier. Der sechszehnte **Q u a u h t l i**, Adler. Der siebenzehnte **O l l i n**, eine Miniatur des grösseren Mittelschildes, Weltzerstörung. Der achtzehnte **T e c p a t l**, Opferrmesser. Der neunzehnte **T l a l o c**, Kopf der Statue des Regen gottes, und der zwanzigste Tag, **X o c h i t l**, Blume, mit der Wasserwanne, dem Samenkorn, der Frucht, einem Maiskorne, und den Staubfäden.

Mit diesen 20 Darstellungen der Tage in einem geschlossenen Ringe wäre somit auch die Einheit, der Begriff eines vollen Monats ausgedrückt. Dass dies aber überhaupt die Symbole für die 20 Tage sind ist mehr denn reichlich durch die vielen Abbildungen beglaubigt, die wir von ihnen in den mexicanischen Codices besitzen. Keiner der Maler, es ist interessant zu beobachten, erlaubt sich von der einmal gäng und gäben Darstellungsform, weder in Contour, noch in Farbe, abzuweichen. So auch nicht der Bildhauer.

Mit der Interpretation der folgenden Zone, der der Quadrate mit den 5 eingeschlossenen Punkten, und ebenso auch mit der um diese Zone gelegten anderen aus kleinen Glyphen bestehenden Zone ist es uns nicht so leicht gemacht worden. In den aufbewahrten Quellen ist von ihnen weder ein Bild noch Text zu finden. Wir müssen bei diesem Mangel äusserer Beweise für das was sie bedeuten mögen, irgend einen inneren Beweis zu entwickeln versuchen. Prüfen wir daher vor allen Dingen erst einmal die Zusammensetzung und Anordnung ihrer einzelnen Bestandtheile.

Die Zone der Quadrate ist, wie Sie sehen, unterbrochen durch die vier Hauptzeiger, und die Zone dadurch in vier gleiche Abschnitte getheilt. Ein jeder der Abschnitte besteht aus 10 Häuschen. Ein jedes Häuschen schliesst fünf Punkte ein. Die allgemein herrschende Ansicht, dass auf dieser Scheibe der altmexicanische Calender dargestellt sei, führt uns auf die Vermuthung es werde in der Aneinanderreihung

der Quadrate sowohl als der in ihnen eingeschlossenen Nummern irgend eine Rechnung verborgen sein, die mit dem Calendar in Verbindung stehe. Zählen wir einmal, was bei einer Summirung der gegebenen Nummern herauskommt. In jedem Abschnitt sind 10 Häuschen, jedes zu fünf Nummern. So erhalten wir für den einen Abschnitt 50, für die viere aber 200 Nummern. Ich gestehe nun offen, dass ich beim Nachzählen dieser 200 Nummern nicht auf den Einfall gekommen wäre, dass sich diese Zahl von 200 zu einer von 260 ergänzen lassen könne. Gama hat mich auf diesen Weg geführt. Ersagt in seiner überall so flüchtigen Beschreibung über diese wichtige Zone folgende kurze Worte: „In ihr ist die altmexicanische Rechnung Metzlipohualli verzeichnet; nur 200 Tage sind sichtbar, die fehlenden 60 sind unter den Zeigern zu suchen!“ Das klingt sehr naiv. Man kann die Zeiger nicht abdecken und darunterschauen; könnte man es wirklich, man würde die 60 Tage sicher nicht darunter finden. Eine weitere Erklärung giebt Gama nicht. Wir wollen aber diese nackte Behauptung als einen Wink auffassen, dessem Sinne doch wohl weiter nachzuspüren werth ist. Hat Gama wirklich Recht, und hätte demzufolge der Künstler, gezwungen wie er war, die Zeiger auf der Scheibe anzubringen, dem Beschauer zuge-nuthet, die fehlenden Tage an den Stellen befindlich zu denken, die er mit den Zeigern zu bedecken hatte, so müsste die Rechnung stimmen, wenn diese Zeiger gerade so viel Platz inne-nehmen, als für die Unterbringung für 60 Nummern oder, was dasselbe ist, von 12 Häuschen nöthig ist. Nehmen wir also einen Zirkel und messen wie viel Raum jeder Schenkel eines Zeigers einnimmt. Wir finden er lässt gerade den Raum für  $1\frac{1}{2}$  Häuschen. Der andere Schenkel nimmt gerade so viel Raum ein. Dies gäbe also für den einen Zeiger Raum zusammen für 3 Häuschen oder 15 Nummern. Da wir nun mit 4 Hauptzeigern zu thun haben, erhalten wir durch sie Platz für 60 Nummern. Diese 60 zu den schon vorhandenen 200 addirt, giebt uns ein hypothetisches Gesammtresultat von 260 Nummern. Nun hat die Rechnung des Mondes, Metzlipohualli gerade eben so viel Tage, als wir hier Nummern gefunden. Demnach ist es sehr wahrscheinlich, dass mit jeder Nummer ein Tag derselben repräsentirt werden sollte.

260  
days  
of religious  
system



Dies ist aber bis jetzt nur erst eine Vermuthung. Leicht könnte gesagt werden die Rechnung stimme nur zufälliger Weise. Sollte der Künstler nicht etwa selber irgend einen festen Wink gegeben haben, dass er wirklich von dem Beschauer verlangte, sich die fehlenden 60 als unter den Zeigern so zu sagen, verborgen zu finden? Blicken Sie einmal auf diese Querlinien, die über die Zeiger gezogen worden! Sie sind eine genaue Fortsetzung derjenigen Ringe, durch welche die Zone eingeschlossen ist. Die Ringlinien reichen genau bis zum Ende jedes der Zeigerschenkel. Einen ornamentalen Zweck werden wir in ihnen nicht vermuthen dürfen. Ein solcher wäre doch nur dadurch erreicht worden, wenn der Künstler alle Linien parallel mit Contouren der Zeiger gezogen. Dadurch, dass er sie querüber zog, hat er wohl entschieden die Absicht kundgegeben, dass wir die Zone der Quadrate uns bis zum Ende der Zeigerschenkel verlängern und die jener entsprechenden Anzahl von Nummern ergänzen denken sollen.

✓  
Noch sind wir aber nicht sicher, ob diese so gefundene 260 Nummern auch wirklich die Symbole für die 260 Tage der Mondrechnung sein sollen. Ganz sicher werden wir erst dann sein, wenn wir zu dieser Zahl 260 auch noch die von 10 fänden, welche die Ergänzung zu der vollen Jahresrechnung von 365 Tagen bilden. Finden wir auch diese 105, dann erst wird die bisherige Vermuthung zur vollen Gewissheit.

Wo nun passender, als gerade in der folgenden Zone, der der Glyphen, werden wir die Darstellung der 105 noch fehlenden Tage vermuthen dürfen? Die Anordnung ist, wie Sie sehen, der vorigen ganz ähnlich. Auch diese Zone ist durch die dazwischen liegenden Zeiger in Abschnitte gespalten. Nur gewahren wir jetzt nicht bloß vier sondern acht Abschnitte. Die vier kleineren Zeiger sind ausserdem dazwischengegetreten. Auch ist das Symbol ein neues, eine Glyphe, die wie es mir scheint, die Nachbildung eines Maiskorns ist. Glücklicherweise wären Tage der Sonnenrechnung von solchen der Mondrechnung verschieden. Demzufolge würden wir uns auch nicht an der verschiedenen Darstellungsform zu stoßen haben. Die Hauptsache ist, dass die Rechnung stimmt, da-



solcher Glyphen in der Zone aufgefunden werden können. Beginnen wir zu zählen, so finden wir sichtbare Glyphen nur 10 in diesen oberen sechs Abschnitten, und je 5 hier in den beiden untersten. Dies gäbe uns 70 sichtbare Glyphen. Es fehlen uns also noch 35 Glyphen zur vollständigen Anzahl in der Sonnenrechnung. Wir bemerken aber, dass uns **auch** hier der Künstler zugemuthet, die fehlende Anzahl als unter den Zeigern fortgesetzt zu denken. Er hat die Fortsetzungslinien auch dieser neuen Zone quer über die Zeiger, und nun nicht bloß über die vier grossen, sondern auch die vier kleinen Zeiger gezogen. Ja, er hat sogar, (und ich fürchte durch irgend einen sehr ungeschickten Rath verleitet) hier auf der Fläche dieses Abendzeigers eine Glyphe innerhalb der Querlinien zu meisseln angefangen. Ueber die Absicht einer Fortsetzung sind wir also sicher. Lassen Sie uns also wieder, wie vorher, messen, wie viel Glyphen wohl unter dem Raum eines jeden Zeigerschenkels gehen würden. Wir finden die Messung ergibt  $1\frac{1}{2}$  Glyphe. Wir haben sechzehn solcher Räume, und somit Raum für 24 Glyphen. Diese zu den vorhandenen 70 hinzugezählt geben 94 Glyphen. Zehn Glyphen mehr müssen wir uns folgerecht noch unter den Helmfedern verborgen denken, (messen) und kommen mit diesem auf eine Summe von 104 Glyphen innerhalb der achtgetheilten Zone. Jetzt ist grosse Noth. Wir brauchen nicht nur 104 sondern 105 Glyphen. Ohne die Auffindung dieser letzten Glyphe würde selbstverständlich unsere ganze Rechnung illusorisch werden. Wenn wir aber auf dem Monument blicken, diese eine und einzige Glyphe ist nirgends dargestellt zu finden.

Nun, meine Herren, der Künstler muss jedenfalls in ebenso grosser Verlegenheit gewesen sein, diese letzte Glyphe zur Darstellung zu bringen, als wir jetzt in der Verlegenheit sind, sie auch aufzufinden. Die Zahl 105, eine ungleiche, lässt sich, das sehen wir ein, nicht gut auf acht Abschnitte theilen, die alle acht genau unter sich gleich sind. Dies war dem Künstler ebenso klar, wie uns. Denken wir aber einmal nach, wie er sich, wenn er überhaupt die Absicht hatte, die 105 Sonnentage in dieser Zone darzustellen, wie er sich hätte helfen können?

Um sich zu helfen hätte er z. B. dem Auge des Beschau-

70

+

24

94

104

1 missing

ers ganz unbemerkt, den unteren Bogen etwas grösser, und dadurch Raum für eine 105te Glyphe gewinnen. Oder auch, er hätte jede der Glyphen des unteren Bogens um einen aliquoten Theil schmaler meisseln können. Aber Bogen sowohl als Glyphen sind insgesamt alle auf sich gleich. Er hätte ferner die fehlende Glyphe vielleicht hieher unten zwischen der Oeffnung des unteren grossen Zeitzeigers darstellen können. Er that es nicht; er hätte dadurch die ganze Symmetrie des Monuments entstellt. Wie hat er sich nun wol geholfen? Ich that in der theoretischen Auseinandersetzung der altmexicanischen Zeiteintheilung im letzten 5 Tage des Jahres Erwähnung, der sogenannte nemotemi. In einer plastischen Darstellung solcher Zeiteintheilung wie sie das Monument geben soll, dürften wohl die so höchst interessanten Tage nicht fehlen. Sind sie wirklich auf ihm vorhanden, nun, so wird unsere Auffassung von dem Thema, welches sich der Künstler durchzuführen vorgenommen, nicht nur nicht immer mehr begründet, sondern wir werden dann auch gezwungen, zuzugeben, dass der Künstler sich überhaupt vollständig der üblichen Rechnung von 365 Tagen im Jahre bewusst gewesen ist. Ihre Augen haben gewiss schon längst den Platz gefunden, an welchem der Künstler diese 5 Nemotemi Tage zu Anschauung bringen wollte. Hier! nahe über dem geöffneten Mitternachtszeiger, eingefügt zwischen den zwei grossen untern Tabletten des Mittelschildes, senken einmal, im Gedanken, diesen Ausschnitt, der ja überhaupt nichts als ein Stück des doppelten Jahreszirkels ist, herab, so wird der Eindruck erzeugt, als wenn seine mangelnde Glyphe grade den Platz bedeckte, wo sie zur Ergänzung der 105 Sonnentage fehlt, und wohin der Künstler sie, aus den angegebenen Gründen, nicht hinzumeisseln sich getraute. Im strengsten Sinne des Wortes hat der Bildhauer die Aufgabe nicht gelöst. Er sinnt uns an die fehlende Glyphe bei der Nemotemi mit in den Kauf zu nehmen. Ich denke wir können das Anerbieten annehmen. Er hat als echter Künstler mit einem Winke deutlicher gesprochen, als wir von Anfang an nur irigend wie vermutheten. Er war hart in der Klemme. Aber er hat sich sinnreich heraus geholfen. Das wie? dachte ich still lächelnd—geb' ich Euch zu rathen auf!—

5 Nemotemi

Also erst jetzt sind wir berechtigt die in der vorigen Zone aufgefundenen 260 Nummern wirklich als Repräsentanten der 260 Tage der Mondesrechnung anzunehmen. Die Zahlen jeder einzelnen Zone sind das arithmetische Complement der andern. Jede, für sich, bringt die so höchst eigenthümliche Trennung des mexicanischen Jahres in eine sogenannte Mondenrechnung von 260, und in eine Sonnenrechnung von 105 Tagen zur Anschauung.

Gefunden waren bisher: Die Symbole für die 16 Stunden des Tages, die für die 20 Tage des Monats; der Monat selber in der Einheit des Tagesringes; ferner die Summe von 365 Tagen, wie sie je in 260 und 105 unterschieden wurden. Schliesslich die 5 Nemotemis. Wir könnten noch nach der Darstellung der Wocheneinheit fragen! Nun, hier ist sie—die fünf Punkte in den Quadraten sollen die fünftägige Woche darstellen! Es bleiben uns noch die Bilder für den 52 jährigen Cyclus und die für die 4 Aeonen zu finden übrig.

Wir werden das Symbol für den 52 jährigen Cyclus auf den Tabletten und in dieser letzten breiten Zone eingegraben finden, welche die ganze Scheibe umgürtet. Wodurch ist dieses Symbol als solches beglaubigt? Eine äussere Beglaubigung ist uns durch Abbildungen von ihm in den sogenannten mexicanischen Codices gewährt. Ich habe Ihnen einige davon ausgesucht. Hier sind sie. (Vorzeigung der Abbildungen, entommen der Kingsborough'schen Sammlung; Codex Vaticanus, pl. 91. Codex Boturini, pl. 10. Codex Tollerianus, pl. 6 und pl. 8.) Vergleichen Sie diese gemalten Bilder mit dem auf der Zone gemeisselten, so werden Sie deren vollständige Uebereinstimmung sofort gewahr. Auf beiden senkt sich ein Schaft in ein rundes Loch, von welchem aus sich Etwas vultenähnliches hervorwindet. Wir gewahren auf den gemalten Bildern, dass jede der Voluten in 2 Hälften getheilt ist, die eine grau, die andere roth gemalt. Dieselbe Abtheilung finden wir auch auf der Sculptur. Was dieses Symbol bedeute wird uns aus der Beobachtung klar, dass wir es in den gemalten Jahrestafeln immer nur dann wiederkehrend finden, sobald 52 Jahre verflossen sind. Wir sehen es immer gerade an das Symbol dieses 52ten Jahres angehängt. An einer Stelle, in Cod. Tell. IV. pl. 8. 1. Kingsb. Coll. Vol. I., es erscheint

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auch mit einem erklärenden Texte. Er lautet: „Dieses ist das Zeichen für die Zusammenbindung der 52 Jahre.“ Hiermit wäre also seine Bedeutung als ein Symbol für den 52 jährigen Cyclus festgestellt, und der äussere Beweis dafür geliefert. Der innere Beweis geht offenbar aus der Zerlegung des Symbols in seine einzelne Bestandtheile hervor:

Der erwähnte Schaft stellt den Reibstab *tetlaxoni* dar, welcher in eine runde Scheibe dürren Holzes gesenkt, quirlartig hin und hergetrieben, den heiligen Funken durch Friction erseugte. Die Voluten sind der hervorquellende Rauch, angeglüht durch den Widerschein des erweckten Feuers.

Zum lebendigeren Verständniss dieses Symbols will ich Ihnen noch in kurzen Worten die Beschreibung der Scene der Wiederanzündung des heiligen Feuers geben, so wie sie uns durch die Chronisten überliefert worden ist.

Die Altmexicaner hatten den Aberglauben, in der letzten Nacht des 52. Jahres werde der Sonnengott die Welt zerstören, er würde niemals wiederkehren. Ihn zu versöhnen, ihn zum Bleiben zu gewinnen, brachten sie ihm freiwillig das grösste Opfer; nicht blos das eines Menschenlebens, sondern auf allen Heerden, in allen Wohnungen und Tempeln ward das Feuer ausgelöscht. Sie überliessen es der Gnade des Gottes, dass er ihnen das der Menschheit Unentberlichste wieder zurückschenken möchte. Sie zerbrachen all ihr Hausgeräth, hingen sich schwarze Masken vor, beteten, fasteten, und am Abend der letzten Nacht reihte sich das Volk zu einer grossen Procession nach einem benachbarten Berge. Dort angelangt, lag auf einem runden Steine ein Mann gestreckt, der sich freiwillig dem Gotte zum Opfer gestellt hatte. Genau um die Stunde der Mitternacht stiess diesem ein Priester das Messer in die Brust, riss aus ihr das Herz heraus, und reichte dieses mit gehobenen Händen gegen den gestirnten Nachthimmel, während ein anderer Priester auf die klaffende Wunde einen runden kleinen Block von trockenem weichem Holz legte, und ein dritter Priester, auf den Stein gesprungen und über dem Leichnam kniend, einen harten Stab senkrecht auf den Block stellt, und jenen dann mit beiden Händen, quirlartig, hin und hertrieb. Dieser gewaltsamen Friction entsprang ein Funken.

Schnell aufgefasst, ward er in einen nahen Scheiterhaufen geschleudert, dessen nun auflodernde Flammen dem Volke das Versprechen verkündete, der Gott wolle doch lieber noch ein wenig mit der Zerstörung der Welt einhalten, und den Menschen eine neue Frist von 52 Jahren Daseins schenken. Wo immer bei Völkern, im Kleinasiatischen wie im Grossasiatischen Continent die Sonne angebetet wurde, lesen wir, hat diese Scene der periodischen Wiedererweckung des heiligen Feuers, vielleicht nur nicht mit einer so blutigen Dramatik, wie in Mexico, stattgefunden. (Folgt Vorzeigung von 3 Bildern: Feueranzündung auf einem Holzbrette aus Codex Selden, pl. 10. Dieselbe auf dem Körper einer Schlange, aus Codex Laud, pl. 8, beide aus Kingsborough Collection; dieselbe Scene auf einem menschlichen Körper aus Codex Veletri, Fol. 34.)

Somit wäre also auch das Vorhandensein des Symbols für die grössere Zeitabtheilung, den Cyclus von 52 Jahren, als auf dem Monument dargestellt, nachgewiesen worden.

Sie bemerken innerhalb dieser selben Zone, hier oben, noch zwei kleine Gruppen von Sculpturen. Diese machen den Eindruck, als wenn sie Schleifen, Knoten darstellen sollten. So ist es auch wirklich der Fall. Was bedeuten sie? Nach genauer Forschung in den gemalten Jahresannalen stellt es sich heraus, dass diese geknotete Schleife ein zweites Symbol für den Ablauf eines 52 jährigen Cyclus ist. Auch dieses Symbol kehrt, wie das vorige von der Wiederanzündung des heiligen Feuers jedesmal in den Annalen bei dem Symbol des 52sten Jahres wieder. Aber nicht angehängt und unter ihm wie das vorige, sondern so unbemerktbar eingeklemmt, dass ich zu der Erkenntniss seines Vorhandenseins überhaupt erst dann gelangte, als mir aus der sogenannten Squierschen Sammlung ein mexicanisches Annalenbild zu Gesicht kam, in welchem der Maler gerade dieses Exemplares es nicht eingeklemmt, sondern abgesondert darunter gezeichnet hatte. Dabei standen im mexicanischen Nahuatl-Text die Worte: *Molpiny xihuitl*, übersetzt: das Zusammenbinden der Jahre. Wir drücken uns aus: ein Jahrhundert geht zu Ende, oder ist abgelaufen. Die Mexicaner sagten: Wir binden die Jahre zusammen.



Hier sind die Abbildungen für die beiden beregten Fälle:  
1) Kingsborough Coll, Cod. Boturini, pl. 10. 2) Codex Squier.

Ich will noch erwähnen, dass auch die Yukateken, die Bildhauer der Palenquesculpturen diesen Knoten als Symbol für eine abgelaufene Periode gebrauchten. Die Auffindung dieser Symbole und die Feststellung ihres chronologischen Werthes wird, sobald wir nur erst noch mehr Studienmaterial erhalten, für die Klärung der alten Geschichte der central-amerikanischen Völker von Bedeutung werden.

Wir kommen jetzt zu den letzten der Zeiteintheilungen, zu den A e o n e n. Sie werden die Symbole für dieselben auf den vier grossen Tabellen dargestellt finden, welche in einer höchst origenellen Anordnung rings um das Haupt des Sonnengottes gruppiert sind. Diese Aeonen, sagte ich schon früher, waren grosse kosmogonische Epochen über deren Dauer die Maler nicht ganz einig gewesen zu sein scheinen. Die von ihnen dabei vermerkte Anzahl der Jahre ist sehr verschieden. Uns genüge jetzt nur zu wissen, dass die eine Tablette, oben rechts, die ersten Aeonen, die Z e r s t ö r u n g d e r W e l t durch Krieg darstellt. Die Tieger gingen aus, so lautet die Tradition, und zerbrachen die Knochen der Menschen. Der dargestellte Tiegerkopf trägt einen Ohrring mit gekräuselter Feder, und eine Troddel hängt noch ausserdem vom Ohre herab. Die in der Tablette angebrachten vier Nummern bedeuten kein Tages oder Jahresdatum. V i e r ist die heilige Zahl, die überall in Rundform oder Strichform da angebracht wurde, wo es sich ganz im Besonderen um Sonnenfeste oder Gegenstände handelte, die mit diesen in enger Beziehung standen. Sie sehen diese Anzahl von v i e r innerhalb der übrigen 3 Tabletten wiederkehren, so auch in grösserer Form in den seitlichen Zwischenräumen der Tabletten, und noch einmal, ebenso, rechts und links, aber dicht am Rande des Kopfedallions. Das links oben an unserer ersten Aeonen-Tablette angebrachte Symbol, 1 Tecpatl oder 1 Opfermesser, ist aber ein echtes Tagessymbol, wahrscheinlich den Tag bedeutend, an welchem ein Fest zu der Erinnerung an die erste Weltzerstörung gefeiert ward. Die 2te Tablette trägt das Symbol für E h e c a t l oder W i n d, zur Erinnerung an die Epoche der Weltzerstörung durch Sturmwinde. Sie ist von der ersten durch die Diadem-



spitze des Sonnengottes geschieden und zwischen beiden eingeklemmt wird eine interessante kleine Sculptur sichtbar. Es ist eine Mauer mit Thürmen verschiedener Grösse, geborsten, und das stürzende und gebrochene Dach darüber durch Wind emporgehoben. Bemerken Sie das kleine Symbol für Hauch oder Wind! Eine Troddel hängt an der Seite des grösseren Thurmes herunter; das zerstörte Gebäu soll also eine königliche Residenzstadt bedeuten. Wenn, wie ich vermuthe, das zerstörte Gebäu für Calli, oder Haus, steht, und der runde Knopf am Dache die Zahl eins bedeutet, so hätten wir wieder die Angabe eines rituellen Festtages vor uns, den von 1 Calli. Geben wir jetzt dem Scheibenbilde eine halbe Wendung nach oben, so erkennen wir in der dritten Tablette den Kopf des Regengottes oder Tlaloc angebracht. Die Welt, so hiess es, war zum dritten Male durch Regen zerstört worden. Regentropfen strömen dem Gotte über die Nase und vom Halse herunter. Unter der Tablette steht ein Festtag mit 1 Tlaloc verzeichnet. In der letzten Tablette finden Sie nun die Darstellung von der vierten Zerstörung der Welt durch eine grosse Fluth. Nichts hat eindrucksvoller auf die Vermuthung eines Zusammenhanges dieser amerikanischen Culturvölker mit denen des Orients gewirkt, als die Mittheilungen, welche die Eingeborenen zur Zeit der Eroberung den Missionären über eine solche Begebenheit machten. Eine grosse Fluth, so erzählten sie, habe vor tausenden von Jahren die Welt überschwemmt. Zwei Menschen, Mann und Frau, der eine Coxcox, die andere Xochiquetzal genannt, hätten sich in einem Nachen gerettet, der an der Spitze eines Berges landete. Nach einiger Zeit sei ein Geier geflogen gekommen mit einem Knochen im Schnabel. Noch dauert die Zerstörung fort, habe Coxcox gesagt. Dann aber sei ein Colibri gekommen, mit einer Blume im Schnabel. Dies war das Zeichen dass die Erde wieder blühe. Das Paar sei ausgestiegen und es stamme von ihm nunmehr die ganze Menschheit ab. Diese Erzählung ist in neuerer Zeit als eine katholische Pfaffenfabel angesehen, und die Bilder, die von dem Ereigniss vorhanden, für unächt erklärt worden. Ich zeige Ihnen hier ein solches Bild. Es ist aus dem Werke von Gemelli, il giro del mondo, Band vi und dem sogenannten Wan-

derungsbilde der Azteken entnommen. Aus einer Wasserfläche sehen Sie, ragt die Spitze eines Berges hervor. Auf dieser steht ein Baum, und auf dem Baum breitet ein Vogel seine Schwingen aus. Zu Füßen der Bergspitze tauchen aus dem Wasser, hier den Kopf eines Mannes, dort der einer Frau hervor. Der eine trägt zu Häupten das Symbol seines Namens, einen Fasanenkopf, (Coxcox, Fasan), die andere eine Hand mit einem Blumenbouquet (xochitl-Blume, quetzal-bunt), Im Vordergrund schwimmt ein Nachen, aus dem ein nackter Mensch seine Arme hülfelehnend zum Himmel emporstreckt. Wenden Sie nun, unter dem Eindrucke dieses Bildes, ihre Augen nach der Sculptur in der Tablette. Hier werden Sie die Fluth symbolisch dargestellt finden in der Anhäufung aller solcher Symbole, welche die Altmexicaner für Wasser anwendeten. 1) eine Wanne mit stehendem Wasser; 2) Tropfen herausspringend, aber nicht zwei, wie sonst auf dem Symbol für Atl, Wasser, sondern hier vier. 3) das Bild für Feuchtigkeit, eine Schnecke. 4) oben ein Crocodil, der König der Flüsse. Inmitten dieser Symbole, die also zusammen: Ueberfluss von Wasser bedeuten, bemerken Sie das Profil eines Mannes mit einer Stirnbinde, und das kleinere einer Frau. Es bleibt wohl kein Zweifel, dass mit diesen Profilen der mexicanische Noah Coxcox und sein Weib Xochiquetzal gemeint sei; ebenso auch dass die Erzählung von ihnen und die dazu gemalten Ailder nicht erst vom katholischen Clerus erfunden, sondern wirklich unter den Eingeborenen. und lange vor der Eroberung, im Gange gewesen sind. Unter der Tablette steht das Tagesdatum 7 Ozomatl (Affe).

Meine Aufgabe den Nachweis zu geben, dass die Scheibe eine plastische und vollständige Darstellung der in Altmexico üblich gewesenen Zeiteintheilung enthält, ist somit im grossen Ganzen erledigt. Wir fanden die 16 Stunden des Tages, die 20 Tage des Monats, die fünftägige Woche, die 365 Tage des Jahres, die 5 Nemotemi, die beiden Unterabtheilungen des Jahres in Mondrechnung von 260 und in Sonnenrechnung von 105 Tagen, die Symbole für den 52 jährigen Cyclus in 2 verschiedenen Formen, und schliesslich die 4 Aeonen.

Sie werden mich noch nach der Bedeutung einer andern

Zone fragen, der, welche zwischen der Zone der Sonnenrechnung und der Cyclen liegt. Nennen wir sie die *Z o n e* des *R e g e n g o t t e s T l a l o c*. Durch das Vorfinden ganz analoger Bilder von „aus den Wolken strömendem Regen“, in den gemalten Annalen, ist diese Erklärung der 12 aller unter sich gleichen Sculpturen gerechtfertigt. Unter jeder dieser regenströmenden Wolken bemerken Sie vier Tropfen gemeiselt, die auf ein Beet von Erde fallen, das durch die drei Furchen dargestellt ist, in welchen ein Saamenkorn liegt. So stellen die Bilder bebautes Land dar. In Anbetracht, dass auf der grossen Opferpyramide nicht blos, wie Sie in der vorgezeigten Skizze sahen, der Tempel der Sonne, sondern auch der des Regengottes *T l a l o c* stand, hat der Künstler bei der Gelegenheit der Einweihung der Pyramide und der Widmung einer Opferplatte, auch dem Regengotte in einer Darstellung des allbefruchtenden Regens seine Huldigung dargebracht.

Noch aber bin ich mit der vollständigen Erklärung der Sonnenscheibe nicht zu Ende. Hier, diese Zone der Cyclen ist uns noch wichtige Aufschlüsse zu geben schuldig. Wir wissen nur erst was jede dieser Cyclentablette bedeutet, nicht, was sie alle in ihrer Verbindung zusammengekommen. So wie die Zone *M e t z l i p o h u a l l i* dadurch noch ganz unerklärt geblieben wäre, wenn wir blos jedes Häuschen für sich betrachtet und nicht ihre Gesamtsumme gezogen hätten, so auch hier. Wir werden die Anzahl der Tabletten zu zählen haben, um dem Probleme auf den Grund zu kommen, welches uns der Künstler so offenbar in ihrer Aneinanderreihung vorgelegt hat. Dass sie als aneinandergereiht, ja als eine ganze Reihenfolge von Tabletten und demgemäss auch Reihenfolge von Cyclenfesten zu betrachten sind, ist offenbar. Sie sehen eine jede dieser Tabletten dicht an den Rahmen der folgenden gefügt. Ganz so stellen auch die Maler, wie Sie hier aus diesen Jahrestafeln sehen, die sich aufeinanderfolgenden Jahre auf Tabletten, und diese eine an die andere geheftet dar. Die Aneinanderreihung und Folge dieser Cyclentabletten geht nun von hier unten, von den zwei mit Helmen geschmückten Köpfen aus. Wen diese Köpfe darstellen sollen, kann ich Ihnen nicht sagen. Der Künstler mag sich unter ihnen die Erfinder und die Verbesserer des Sonnenkalenders gedacht haben. Von

ihnen aus wendet sich die Zone nach rechts und links herum, und endigt eine jede Hälfte derselben oben mit einem Zeiger. Diese zwei Zeiger convergiren, und nehmen ein Tablettenbild in die Mitte, welches hoch oben die ganze Scheibe krönt.

Die Zählung der Tabletten ergibt nun auf jeder Seite die Anzahl von zwölf, zusammen also vier und zwanzig. Begreift nun jede derselben und der ihr entsprechende Cyclus die Summe von 52 Jahren, so würden 24 solcher Tabletten die Gesamtsumme von 1248 Jahren darstellen. Was wir mit diesen 1248 Jahren zu thun haben, ist klar genug vom Künstler angedeutet. Wir sollen sie in eine gewisse Beziehung zu der grossen Tablette bringen, welche zu Häupten der Scheibe angebracht ist. Denn nichts anderes können die beiden Zeiger bedeuten, in deren Gefolge wir rechts und links die beiden Cyclencolumnen nach jener Krontablette sich hinbewegen sehen. Den eigentlichen Inhalt dieser Beziehung werden wir aber erst dann zu ergründen im Stande sein, sobald wir wissen werden, was denn eigentlich das in der Tablette eingegrabene Symbol bedeutet. Nun, nichts ist leichter zu entziffern, als gerade dieses Symbol. Es ist das von *Acatl*, Rohr, welches wir schon als den 13ten Tag im Monat kennen gelernt hatten. Wir sehen dem Symbol die Nummer 13 beigegeben, und lesen demgemäss 13 *Acatl*. Da nun 13 *Acatl* ein wohlbekannter Name für ein bestimmtes mexicanisches Jahr, nemlich für das letzte des 52 jährigen Cyclus ist, so hätten wir nur noch dies Jahr 13 *Acatl* in unsere chronologische Sprache zu übersetzen. Dafür verweise ich einfach, denn ich muss kurz sein, auf die authentischen Reductionstabellen, die ich auf Verlangen vorweisen und auch auf Wunsch erklären werde. Dies Jahr 13 *Acatl*, in das entsprechende Jahr unserer Zeitrechnung umgewandelt, giebt das Jahr 1479 A. D.

Ein Jahresdatum, eingegraben an solcher Stelle wie diese, ruft von vorneherein die Vermuthung wach, dass es den Zeitpunkt anzugeben beabsichtigt, in welchem das Kunstwerk gefertigt und den öffentlichen mit ihm verbundenen Zwecken übergeben worden sei. Wir kommen über jeden Zweifel hinaus, wenn wir uns des Stifters dieser Altarscheibe, des Königs *Axayacatl*, erinnern, von welchem der Chronist Tezozomoc aussagte, er habe, an den üblen Folgen der Einweihungsfeier

erkrankt, diese letztere kaum noch ein Jahr überlebt. Die Regierungsdauer dieses Königs Axaycatl ist vom Jahre 1466 bis 1480. Sie sehen hieraus wie verlässlich sowohl der Bericht des Chronisten, als auch die Erklärung des Jahres 13 Acatl mit 1469 A. D. ist. Die Beziehung nunmehr, in welche der Künstler die beiden Cyclencolonnen zu dem Jahre 1479 A. D. zu bringen wünschte, war wol keine andere, als dem Beschauer kund zu thun: er habe, als er in dem besagten Jahre 13 Acatl, die Altarscheibe meisselte, in den Annalen 24 Feste der Wiederanzündung des heiligen Feuers verzeichnet gefunden. Dies würde also in unserer Sprachweise lauten, dass die Mexicaner in dem Jahre 1479 A. D. 1248 Jahre verzeichneter und nationaler Geschichte hinter sich hatten. Demgemäss würde also der Anfang ihrer nationalen Aera auf das Jahr 231 A. D. zu stellen sein.

Welches besondere historische Ereigniss als mit diesem Datum zusammenfallend gemeint sei, ist nicht unschwer zu errathen, sobald man nur überhaupt mit allen Traditionen, den Berichten der Missionäre, den Sammelwerken der Chronisten, und den Erklärungen vertraut ist, welche letztere beispielsweise uns noch im vorigen Jahrhundert aus altmexicanischen Bildertafeln über die Vorgeschichte der Anahuac-Völker hinterlassen worden sind. Ich kann hier an dieser Stelle, leider nicht, so interessant es mir erscheint, auf das Nähere eingehen. Nur soviel sei gesagt; es stellt sich nach Prüfung aller der angegebenen Quellen heraus, dass die Annalen in die Mitte unseres dritten Jahrhunderts die Ankunft von Männern versetzten, welche von drei östlichen Häfen Centralamerikas, dem von Tampico, Xicalanco und Bacalar aus in das Innere des Landes eindringen, die Riesen, das heisst die Eingeborenen von Cholulla erschlugen und in Yukatan Honduras, Chiapas und Mexico die Gründer und Erbauer jener zahlreichen Städte und Tempel wurden, deren Ruinen wir heute bewundernd betrachten. Die Scheibe demnach mit dieser ihrer chronologischen Zone, wird als eine der zuverlässigsten Quellen für altmexicanische Vorgeschichte angesehen werden müssen. Einerseits giebt sie selbständig, ein Geschichtsdatum, anderseits bestätigt sie aber ein solches, welches lange nur in vagen Andeutungen geahnt und



deshalb nur immer mit Blicken des Zweifels und Misstrauens angesehen wurde.

Noch viel mehr wäre über den Inhalt dieser chronologischen Zone zu sagen. Dies wird dem aufmerksamen Beschauer derselben nicht entgangen sein. Ich muss aber davon abste-  
hen, jetzt gerade weitere Auskunft zu gewähren. Ebenso  
auch muss ich abste-  
hen, jetzt auch von den Schlüssen zu spre-  
chen, die sich nunmehr auch aus der Feststellung eines so  
frühen geschichtlichen Datums auf noch frühere folge-  
recht ziehen liessen. Daten freilich, die nur in gemalten  
Annalen verzeichnet gewesen. Ich würde Sie damit bekannt  
machen können, was wol unter dem Datum X Calli, oder  
137 A. D. in Besonderen zu verstehen sein wird, in welchem  
Jahre die Vorannalen von einer grossen Sonnenfinstern-  
is sprechen. Ebenso auch mit einem Datum I Tecpatl,  
an welchem sich die Astrologen zur Correction des  
Calenders versammelt haben sollen, und das nunmehr mit  
Jahre 29 vor Christi Geburt zu berechnen wäre. Ich habe dem  
aber Ihre Aufmerksamkeit und Zeit schon über die gebotenen  
Grenzen hinaus in Anspruch genommen und schliesse den  
Vortrag mit dem wärmsten Danke für den mir so zahlreich  
gewährten Besuch.

### **Druckfehler.**

Seite 4, Zeile 13 v. u. statt Blumeu lies Blumen.

“ 5, “ 7, 8 & 13 statt yukatesisches lies yukatekisches.

“ 8, “ 11 v. u. statt Bilderbögen lies Bilderbogen.

“ 11, “ 5 v. u. statt Tezozomoc's lies Tezozomocs.

“ 12, “ 1 v. u. statt der Sonnenzeit lies: dem Sonnen-  
dienst.

“ 14, “ 4 v. u. statt mond lies Mond.

“ 23, “ 14 v. u. statt Tollerianus lies Tellerianus.  
1 v. u. statt es erscheint lies erscheint es.

“ 26, “ 8 v. u. statt links oben lies rechts oben.

“ 28, “ 15 v. u. statt Ailder lies Bilder.

*und viele andere mehr*

*P. C.*



## *THE PREHISTORIC MONUMENTS OF THE LITTLE MIAMI VALLEY.*

BY CHARLES L. METZ, M. D.

The aboriginal earthworks in this vicinity are so rapidly becoming more and more indistinct, from the effects of continued cultivation, the elements, the leveling of many for building sites, and the carting away of others for the purpose of making fills and grades, that in a few more years their sites will be obliterated and forgotten.

This has determined me to prepare a chart, giving the location of the works, and mounds, in Columbia township, and of those in Anderson and Spencer townships, situated near the Little Miami River.

They are principally situated in Groups, and are marked respectively, A, B, C and D, on the chart.

### GROUP A.

Is situated partly in section 9, and partly in section 15, Columbia township, Hamilton county, Ohio, one mile west of Plainville station, on the Little Miami Railroad, and on the second bottom or plateau of the Little Miami River, on a narrow sandy ridge of a reddish color.

This ridge has an elevation, averaging from 10 to 25 feet above the general level of the plateau on which it is situated. It lies between the Wooster Turnpike, and the Little Miami Railroad and River, elevated about 200 feet above the latter. On this ridge the principle work of this group is situated.

Commencing at the east end of the ridge, and in a wood known as "Stites Grove," we find an earthwork (Group A, No. 1) consisting of a circle, central tumulus, and an oval-shaped tumulus impinging on the outer southeast edge of the circle. The following extract, from an article entitled "The Mound Builders," by Mr. Florian Giauque, published in the *Harvest Home Magazine*, August, 1876, describes this work as follows: "In the grove known as the 'picnic woods,' owned by Mr. Charles Stites, of Columbia, and on the top of this ridge, there is a circular enclosure, made by a ditch, and an earthen embankment outside of and immediately adjoining this ditch, and no doubt made of the material which was taken from it. From the bottom of this ditch to the top of the embankment, the present height is about  $5\frac{1}{2}$  feet; the diameter of the ditch from deepest cut on either side is 75 feet; the enclosing embankment, from crest to crest, is 105 feet; and the diameter of the entire work from outside to outside is about 145 to 150 feet. On the east, this embankment is enlarged into a regular mound, about 48 feet in diameter, and about 6 feet high above the adjacent ground. At the south-east part of the enclosure, there is left an entrance way about

10 feet wide—that is, there is here neither ditch nor embankment—this entrance faces and is about 40 feet away from the edge of the terrace or bluff, which is here quite steep, and about 100 feet\* (estimated) high above the river, which is here quite near the foot of the bluff. The edge of the terrace and ridge coincide here.”

The ridge to the east of this work slopes gently until it reaches the general level of the plateau. On this slope numerous relics are found.

The above described work was explored by Mr. Giauque and others, and several fine relics were found. The finding of one he describes as follow:

“One of the trenches was begun about the north of the mound, and the writer (Mr. Giauque), while working here, hardly a foot below the surface of the mound, and about 7 feet from the centre of it, found a very fine relic. It is a tube 6 inches long, a little less than an inch in diameter, made of crinoidal limestone, highly polished, though somewhat coated and discolored in places by the oxide of iron which has collected on it during its long burial. The hole extends entirely through from end to end, but grows rapidly smaller near one end, being about  $\frac{5}{8}$ ths inch in diameter most of the distance, and about 3-16ths of an inch at the smaller end. This relic is in fact a cylinder for about  $4\frac{1}{4}$  inches of its length, to a diamond shaped perforation.”

I have measured the circumference of some of the larger trees growing on this work; an oak has  $9\frac{1}{2}$  feet, beech  $8\frac{1}{2}$  feet in circumference on the central tumulus, maple 6 3-10 feet, an oak 6 7-10 in circumference. North-west of this work, and about 200 feet distant, at the foot of the sand ridge, and on the general level of the plateau, is a mound (Group A, No. 2), which has been recently explored. Its diameter east to west is 45 feet, elevation 7 feet. An oak tree on its western slope has 8 7-10 feet, and a beech on its eastern slope 5 feet of a circumference. An interesting account of the exploration of this mound, by Mr. Giauque, was published in the *Harvest Home Magazine*, in the article from which I quoted above. The circumstances of the exploration are of considerable interest to the archæologist, and I make the following extracts from Mr. Giauque's article:

\* \* “About 11 feet from the outside, and 2 feet above the original surface, the shovel hitherto working pretty freely in clayey sand, struck the first big stone. It was a flat limestone, possibly brought from the neighboring hill, about half a mile away, as there were none nearer, and it was much reddened and softened by fire, the fossil shells in it being whitened, or more nearly calcined than the other parts. This, together with charcoal and ashes, pieces of bone, pieces of boulder

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\* The bluff is here 200 feet high.

broken by fire, were very encouraging indications of a 'find.' Further digging showed that the rock struck was a part of a stone arch, rudely made of undressed limestone. \* \* \*

"That part of the arch first found was removed, and under it was found a skeleton, the *tibia* (shin bone) being the first part of it discovered. The arch was then entirely uncovered, the earth removed between it and the skeleton, and the skeleton taken out. \* \* If the mound had been divided into four parts, by drawing a line through its centre from north to south, and another similarly from east to west, the arch would have been entirely within the northwest section of the mound, and the skeleton which it covered, lay with its head nearly towards the northeast (N. E. E.) Perpendicular sections of the mound, as dug away that day, showed from the bottom upwards.

"1. The skeleton resting on or near the original surface, which was a sandy clay, quite compact and hard.

"2. About a foot of sandy earth, possibly mixed with ashes, but no charcoal nor pieces of boulder nor bone; and especially in places where the rock above had relieved it from pressure, quite loose and soft.

"3. The arch, hitherto so called for convenience, but perhaps hardly entitled to the name. This was made, as has been said, of undressed but flat limestone, averaging about 20 to 30, and 6 to 8 inches in length and breadth; 4 inches in thickness, and approximately most of them being about a medium between these extremes; the arch was about 7 feet long, and  $5\frac{1}{2}$  or 6 wide; its highest part being in a line with, and directly over, the body, and arching downward on either side till its edges on the right and left of the skeleton nearly reached the clay on which the skeleton lay. But the stones were not set up on edge, so that the structure, while really an arch in form, was probably not self-sustaining. \* \* \* It contained three layers of stone, one over the other, making about a foot in thickness.

"4. A thin layer of sandy earth, about one inch on the highest part, and increasing in thickness toward the sides.

"5. Charcoal and ashes, the charcoal not plenty, nor in large pieces, this indicating that the fire had burned out before being covered up with earth. This fire was hot enough to color all the top rocks, as mentioned of the first one found.

"6. A layer of sand, about 15 inches thick, with pieces of fire-cracked boulder, burnt limestone, and pieces of human bones, much decayed—or were they partially burned?

"7. Another layer of charcoal and ashes similar to the one below, about  $\frac{3}{4}$ ths of an inch thick.

"8. Clayey sand to the top, so soft as to be shoveled without loosening with a pick, and nowhere over  $2\frac{1}{2}$  feet thick. \* \* No ornaments or implements of any kind were found in this mound."

West and to the south of this tumulus, and on the same continuous sand ridge mentioned above, are four or five elevations or tumuli, with an average height of three to four feet, being from two to three hundred feet apart (Group A, No. 3). The ridge is here under cultivation, numbers of relics, flint chips, and broken bowlders, are ploughed up on this ridge.

Northwest of those tumuli, and on the general level of the plateau,  $\frac{1}{4}$  mile distant, is a mound (Group A, No. 6), which has a circumference at base of 200 feet, and an elevation of 7 feet; it is as yet unexplored, but cultivated annually.

Four hundred yards to the northeast of this mound, and at the junction of the Wooster and Madison turnpikes, can yet be traced a circular work, which has a circumference of 600 feet (Group A, No. 7). 20 years ago, I am told by an old settler, that the circle had an elevation at that time of three feet, and that there was a mound four feet high in the centre; at present it is almost obliterated. Its northern side in places has an elevation of eight to twelve inches. On the south and eastern side, the work can be traced by the yellow color of the soil. The northeast side is occupied by the Madison turnpike.

Continuing on to the southwestward of the small tumuli, and along the previously described sand ridge, we come to what is known as the "Pottery Field" (Group A, No. 4). Here the ridge slopes gently to the south and southeast, with an elevation of from 60 to 80 feet above the level of the Little Miami River. This field is a plateau of about four acres in extent, sloping back to the higher ground. On this plateau, fragments of pottery are found in great abundance. Flint chips, arrow points, broken bowlders, burnt limestone, and the shells of the fresh-water muscles (*unio*) are found all over the surface. Human remains have been found in the adjoining ravines, and on the slopes; the graves were isolated and shallow, and the method of burial was not uniform. Bones of various wild animals are also found.

Two hundred yards north of the pottery field are several small tumuli (Group A, No. 5); the largest has a circumference at base of about 100 feet, height  $5\frac{1}{2}$  feet; this mound has been dug into, but not yet explored. The pottery field, and also the tumulus (Nos. 4 and 5) are situated in section 9, Columbia township, in what is known as Ferris' woods, in "Still House Hollow." The largest trees on the pottery field measure as follows: A walnut,  $15\frac{1}{2}$  feet in circumference; an oak, 12 feet in circumference; a maple,  $9\frac{1}{2}$  feet in circumference; and an elm 12 feet in circumference.

A quarter of a mile further west, in section 15, on the estate of Joseph Ferris, and just southeast of the family-homestead, is a circular work, with an inside ditch and a central elevation. Its circumference is

about 200 feet; diameter from east to west, about 65 feet. This work is almost obliterated. It is distant from the river half a mile, and elevated above it about 80 feet (Group A, No. 8).

#### GROUP B.

The works comprising this group are situated, part in Sects. 15 and 21, Columbia township, and part in Sects. 14 and 20 of Spencer township. Immediately south of Red Bank Station, L. M. R. R., commences a gravelly ridge, having an average elevation of about 40 to 50 feet above the general level of the surrounding plateau, and extending in a southwesterly direction for three fourths of a mile along the course of the Wooster turnpike. On this ridge, and on the estate of Dr. O. M. Langdon, we have a tumulus (Group B, No. 1) and a circular excavation. The tumulus has an elevation of nine feet, and a circumference of 200 feet at base. It has not been explored, and is covered with young forest trees. 300 yards southwest of this tumulus, is the circular excavation (Group B, No. 2). Its diameter north to south is 40 feet, east to west 44 feet, depth 7 feet. An old settler related that 50 years ago remains of stakes or palisades could be seen surrounding this excavation. The southeast slope of the ridge near this excavation, is covered with huge conglomerate masses, under which are two small caves (Group B, two asterisks)—no evidence exist about them as to their having served as habitations.

Half mile west of this ridge is an elevated plateau sloping to southward, until it coincides with the first bottom of the Little Miami River. On this plateau, at its highest elevation just south of the Little Miami Railroad, and at the junction of Oak and Elmwood Avenues of the Linwood Land Co's. subdivision, was a mound (No. 3, Group B), recently removed in the grading done by the Land Co. The superintendent of the grading, informs me that there were two circular layers of human remains, one near the general level of the ground, and one three feet above the lower one; he gives its height as eight feet, and its circumference at base of 200 feet. The Hon. Judge Cox states to me that this mound was enclosed by a circular work that had a diameter of 800 feet.

South of this mound, distant 200 yards, was a mound which was explored 50 years ago (site marked by an asterisk). My informant, Mr. Riggle, remembers that in a kind of a stone coffin, as he describes it, were two skeletons lying side by side, with their feet to the east, and that their faces were covered with layers of mica.

The five acres west of those mounds, are known as the "Indian Burying Ground" (Group B, No. 4), now subdivided into lots by the Linwood Land Co. The square bounded by Elmwood, Walnut,

Oak and Maplewood avenues, covers the greater part of the ancient cemetery, and an excavation made anywhere within or near those boundaries will reveal human remains. The inhumation was usually at length, with head to east.

A short distance east of the Linwood Station, on the south of the railroad, can yet be seen a portion of a mound remaining. This mound was removed to make way for the L. M. R. R. (Site marked by an asterisk). Many relics were found in grading down these mounds, and leveling the ground over the cemetery, and are in the collections of Dr. H. H. Hill, and J. J. Hooker, of Cincinnati, and of the writer and others.

The hill northwest of Red Bank station, and distant about two hundred yards from it, has an elevation of about 150 feet. This hill is terraced on its eastern and southern slope; the terraces are five in number, and are undoubtedly the work of human hands. On the top of this hill is a mound (Group B, No. 5); its present elevation is about four feet, and has not been explored.

Southwest of this mound, and at about the same elevation known as "Linwood Hill", distant about 400 yards, is the site of a mound (marked by an asterisk, Group B); it has been graded down. I could learn nothing positive as to its dimensions; the Anderson house occupies its site. Still farther westward, a quarter of a mile distant, and at the same elevation on the Land Company's property, is a mound (Group B, No. 6) four feet high, and a circumference of 150 feet. It has not been explored.

One half mile north of Red Bank station, on the second bottom or plateau of Duck Creek, immediately southwest of the western end of the Cincinnati & Eastern Railroad trestle, is a mound eight feet high, and 200 feet in circumference at base (Group B, No. 7). It has not been explored, but is cultivated annually. Half mile to the northwest of this mound is another, with an elevation of five feet, and circumference of about 175 feet. It is on the same level as the foregoing one, and on the lands of the Dr. Duncan estate (Group B, No. 8).

#### GROUP C.

Is located together in Anderson township, and principally along the Batavia turnpike, commencing at Dry Run, and at a point where the turnpike crosses it. Coming west on the first bottom of the creek, and but a few yards distant from it, on the north side of the turnpike, is a mound. Its present height is eight feet; circumference at base, 250 feet. It is of very regular shape (Group C, No. 1), and well preserved.



Ascending to the second plain or bottom of the river valley, which here has an elevation of thirty to forty feet above the first bottom, and is formed of drift gravel extending along towards the southwest for three quarters of a mile, and running back to the base of the hills. On this plain, and on the north side of the turnpike, in a line with the first mound described above, are three mounds about 200 feet apart (Group C, Nos. 2, 3, 4). Nos. 2 and 3 have an elevation of about four feet. No. 4 has an elevation of ten feet, with a circumference of 250 feet at base. Neither of these have been explored; Nos. 2 and 3 are cultivated annually. South of the turnpike, and on the same level, are two mounds (Group C, Nos. 5 and 6); the largest, No. 6, has a height of five feet, and No. 5 a height of three and one half feet above the general level of the plain.

Four hundred yards southwest of the last two mounds, and on the same level, on the lands of the Martin estate, is situated the "big mound." This is the largest mound in this vicinity, and in the county. Its present elevation is about 39 feet, with a circumference of 625 feet at base (Group C, No. 7). It has been cultivated for the last thirty years, with the exception of the last two years, and is now overgrown with blackberry bushes. It was at one time covered with forest trees; a large oak on its top had a diameter of four feet; this I have from reliable authority. It has not been explored; the proprietor desires to let the dead rest, as he expresses it.

West of this mound, 300 yards distant, is a small mound annually cultivated, and now about three feet high (Group C, No. 8); north of this last mound, and on the first bottom of the Miami River, are the remains of a mound, this was cut away in the building of the turnpike (its site is marked by an asterisk). Bones and relics were found at the time, but I could learn nothing more than that fact. Continuing westward we reach the Odd Fellows' Cemetery at Newtown; in this cemetery is a mound (Group C, No. 9), with an elevation of ten feet; circumference at base 210 feet; it has not been explored. 300 yards northwest of this mound, on the Plainville road, was a mound; it has been recently removed, its material being used for the purpose of making a fill on the road. It contained bones, charcoal, etc., but not much attention was given it by its destroyers. It had a height of about seven feet, and a circumference of 150 feet (Group C, No. 10). Directly in front of the old M. E. Church, in Newtown, was a mound; it was removed, and the material used in the construction of the Plainville road (site marked, by an asterisk), 3-4 mile south of Newton, on the Clough Creek, Newtown road, on the lands of Col. Jewett, is a mound 15 feet high, and a circumference at base of 225 feet; it has not been explored (Group C, No. 11).

Mound No. 12, of this Group, is situated half a mile east of the Union Bridge, on the Batavia turnpike, and immediately in front of the old Turpin homestead. It has been much reduced in size; its present elevation is ten feet; in circumference, 175 feet at base.

#### GROUP D.

Nos. 1, 2, 3, 4, 5, of this Group, are situated in Anderson township, and on the lands of Mr. Michael Turner. Nos. 6, 7 and 8, of this group, are on the opposite side of the river, in Sections 29, 28, 23, 22, of Columbia township. No. 1 is the largest and most interesting work in the Miami Valley. An extract from an article by T. C. Dale, or Day, in *The Antiquities of the Miami Valley*, published in the November number of the *Monthly Chronicle*, in 1839, is as follows: "The site of this stupendous fortification, if we may so call it, is a few rods to the right of the road leading from Newton to Milford, and about midway between them. It is situated on a ridge of land, that juts out from the third bottom of the Little Miami, and reaches within 300 yards of its bed. From the top of the ridge to low-water mark, is probably 100 feet. It terminates with quite a sharp point, and its sides are very abrupt, bearing evident marks of having once been swept by some stream of water, probably the Miami. It forms an extremity of an immense bend, curving into what is now called the third bottom, but which is evidently of alluvial formation. Its probable height is forty feet, and its length about a quarter of a mile before it expands out, and forms the third alluvial bottom. About 150 yards from the extreme point of this ridge, the ancient workmen have cut a ditch directly through it. It is thirty feet in depth, its length, a semi-circular curve, is 500 feet, and its width at the top is eighty feet, having a level base of forty feet.

At the time of its formation, it was probably cut to the base of the ridge, but the washing of the rains has filled it up to its present height. Forty feet from the western side of the ditch is placed the low circular wall of the fort, which describes in its circumference an area of about four acres. The wall is probably 3 feet in mean height, and is composed of the usual brick clay, occasionally intermixed with small flat river stone. It keeps at an exact distance from the top of the ditch, but approaches nearer to the edge of the ridge. The form of the fort is a perfect circle, and is two hundred yards in diameter. Its western side is defended with a ditch, cut through in the same manner as the one on the eastern side. Its width and depth is the same, but its length is greater by two hundred feet, as the ridge is that much wider than where the other is cut through. The wall of the fort keeps exactly the same distance from

the top of this ditch as of the other, viz., forty feet. Its curve is exactly the opposite of that of the other, so as to form two segments of a circle. At the southeastern side of the fort there is an opening in the wall thirty-six yards wide; and opposite this opening is one of the most marked features of this wonderful monument. A causeway extends out from the ridge about 300 feet in length, and 100 feet in width, with a gradual descent to the alluvial bottom at its base.

The material of its construction is evidently a portion of the earth excavated from the ditches. Its easy ascent and breadth would induce the belief that it was formed to facilitate the entrance of some ponderous vehicle or machines into the fort. To defend this entrance they raised a mound of earth seven feet high, forty wide and seventy-five long. It is placed about 100 feet from the mouth of the causeway, and is so situated that its garrison could sweep it to its base. The whole area of the fort, the wall and causeway, are covered with large forest trees, but there is not a tree growing in either of the ditches, and there are but a few low underbrush on their side."

At present the circular wall is almost leveled, but can be readily traced by the color of the soil, and the large number of flat river stones. The ditches can be easily recognized. The mound is still prominent. It measures now, height  $5\frac{1}{2}$  feet, diameter 25 yards, circumference 75 yards. The causeway is cut through by the C. & E. R. R., the forest cut away, and the soil cultivated annually.

No. 2 of this Group is a large, circular embankment, with a diameter of about 125 yards. The material forming the embankment is evidently taken from within the enclosure. This work is a perfect circle, with an opening or gateway thirty feet wide to the south. It is about 300 yards distant from the first work of this Group. Two hundred yards to the south of this circle are two mounds, No. 4 on chart being the larger. It has a circumference at base of 250 feet, and an elevation of twelve feet. One hundred and fifty yards east of these mounds is another of very regular shape (Group D, No. 5, on chart); height, four feet, circumference, 150 feet. No. 6 of this Group is a small mound, situated in Section 22, Columbia township, on a elevated ridge known as Gravelotte, on the estate of T. R. Biggs. It is situated in a corner of a large embankment. Its height is 3 feet, circumference 150 feet. No. 7 of this Group is located in Section 29, Columbia township,  $\frac{1}{4}$  of a mile west of Camden, just south of the Wooster turnpike. It is now only one third its former size, it being partly removed in the construction of the Wooster turnpike. Its present dimensions are, height nine feet, diameter seventy feet. In the southeast corner of Section 29, at the village of Camden, and 300 feet east of the

south line of Mr. Galloway's residence, is the corner of an embankment which extends east and south to the river. It extends  $\frac{3}{4}$ ths of a mile east, until it reaches the bank of the river, which is here about 40 feet high, the other running south until it reaches the edge of the gravel ridge, and then runs east to the river. It incloses from 800 to 1000 acres of ground. This embankment, 50 years ago, was six feet high and twelve feet wide. It is now scarcely traceable, and is best discoverable in spring time, and just after ploughing, when it can be readily traced across the fields by the peculiar color of the soil.

In Section 30, Columbia township, on the lands of Mr. K. Bonham, is a mound, 8 feet high, and 200 feet circumference at base. In Section 34, on Norwood Heights, is located a mound that commands an extensive view of the surrounding country. Its height is nine feet, circumference 200 feet. It was probably a mound of observation.

Other mounds and earthworks will doubtless be discovered in this vicinity, as the forests are cut down, and the ground cleared; and those described and located in the present paper are but a few in the long chain of works extending up along the course of the Little Miami and the East Fork valleys.

In conclusion, I would say that to Mr. Chas. F. Low, Mr. Archer, of the Marietta & Cincinnati R. R., and to Mr. W. R. Kemper, my warmest thanks are due for their assistance in preparing the accompanying chart, and to Mr. F. W. Langdon, who kindly assisted me in carrying out investigations. To the archæologist a complete and speedy examination of this whole valley is of the utmost importance.

MADISONVILLE, HAMILTON Co., O., August 7, 1878.

36

35

*Norwood Heights*

*Norwood*

34

33

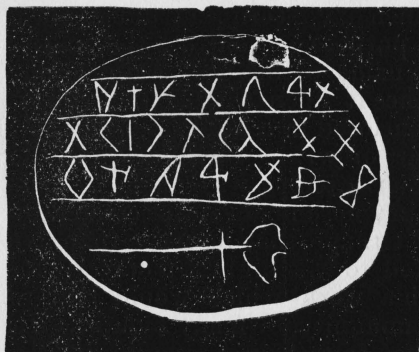
*Madison*

32

S P E N C

# INScribed STONE OF GRAVE CREEK MOUND.

*Report of M. C Reid, of Hudson, Ohio, on the Inscribed Stone of the Grave Creek Mound, read at the meeting of the State Archæological Society, held at Wooster, Ohio, September 25, 1878.\**



In studying this supposed relic of the past we are to search for all available evidence to enable us to answer the following questions:

1st: Is the inscription on the stone alphabetical? For if not, the question when and by whom it was made is of no practical importance.

2nd: If alphabetical does it represent any of the known alphabets of the world?

3rd: Is it an authentic find? That was, is it found in the mound in such a position, that we can safely say it is as old as the mound, and was buried in it at the time of its construction.

4th: If alphabetical and authentic what does its burial and character indicate?

Under the latter head the following facts should be considered. It is not a costly or elaborate piece of work. It could easily be made by any one with or without the use of iron. It is a thin piece of sandstone, unpolished, of the form accident has given it, the edges only wrought, with an inscription which required only a few minutes to make. If alphabetical and deposited in the tomb of one of the mound builders, it indicates a knowledge of the use of letters so common that the art of writing was not confined to a special class. Its simplicity indicates that it was written hastily for some special purpose and if intentionally deposited in the tomb that it was written as a charm, or to designate the name or rank of the

\*NOTE.—At the meeting of the State Society, held at Cincinnati in 1877, Dr. A. A. E. Taylor, of Wooster University, Rev. J. P. McLean, of Hamilton, O., and the writer of this report, were appointed a special committee to report upon the evidence of the authenticity of the Grave Creek Mound Inscribed Stone. For various reasons the other members of the committee were not able to take part in the preparation of this report, and are not to be held responsible for its statements or conclusions.

In collecting and discovering the evidence now attainable, the writer undertook to divest himself of all pre-conceived opinions, to investigate the matter *de novo*, and with judicial impartiality. The general conclusions reached were approved by the Society and by Dr. Taylor, the only other member of the committee present at the meeting.



person buried, or to render him some imagined assistance. If a writing, it is a piece of *carnal* ordinary work to be used and thrown away as an unimportant note that has been read, or written at the time of burial to be buried with the dead. In either case it indicates the common use of writing and makes it appear very strange that in all the mounds carefully examined no other similar inscriptions have been found.

A thin, water-worn piece of sandstone without ornament, could hardly be chosen for such an inscription unless for a temporary use, or for such a purpose as controls the soldier in the field, when he cuts the name of his deceased comrade upon a piece of board, scratches it upon a stone, or writes it upon a piece of paper to be enclosed in a bottle and buries it with the body. And if the art of writing was known to the builders of this mound and an attempt was made to perpetuate the memory of those in whose honor it was created by the use of this *art*, it is very strange that no more than five minutes time would be devoted to this highest mode of honoring him in connection with a work which would require the whole labor of a large community for many months. In a permanent structure, designed to last through ages, and requiring immense labor for its execution we would expect no insignificant, *ex tempore* inscription like this, unless accidentally buried. If obtained from others and held by those who knew not the art of writing, and treasured by them as a mysterious charm, then it might be designedly buried in the tomb of the owner and in such a mound as this.

But is it alphabetical? Schoolcraft, who had no doubt as to its alphabetical character, after correspondence with noted antiquarians, finds in the inscription four characters corresponding to the ancient Greek; four Etruscan; five Runic; six ancient Gallic; seven old Erse; ten Phœnician; fourteen old British; sixteen Celtiberic, with some resemblance to the Hebrew, but is inclined to regard the whole inscription as Celtiberic. Now in the old alphabets of the world which took their form before the local invention of paper, when writing was not writing but engraving, the ingenuity of man was substantially exhausted in the formation of letters by a combination of straight lines, so that now it is very difficult, if not wholly impossible to engrave on a stone twenty arbitrary characters of which a large number will not be simply reproductions of ancient letters. I have asked several different persons, who had never seen the inscriptions in Cesnola's Cyprus, to write down for me twenty or more arbitrary characters not resembling any figures or alphabetical characters known to them, and composed of straight lines or combinations of straight lines. In every case an inscription

was produced presenting as many indications of being alphabetical as the one under discussion, and on comparing them with Cesnolas' inscriptions alone—of one, five would be pronounced Cypriotic and three Phœnician; of another, eleven Cypriotic and two Phœnician; of another, eight Cypriotic and three Phœnician; and of the other, ten Cypriotic and eleven Phœnician; while the tendency to reproduce familiar forms was shown in the fact that in every case one or more of the characters would, in inscriptions, be pronounced English.

In this inscription a similar tendency is apparent. The familiar forms are a cross, found twice; an X; a diamond; an hour-glass; the capital D with a line which makes it represent a bow and arrow; and the figure 4, the latter exactly representing our printed figure. This much is evident, that the inscription is not necessarily alphabetic. It is just such a medley of characters as any one would produce who undertook to invent an inscription to puzzle the curious. It might be objected that in such an attempt, care would be taken not to produce any modern forms. But these fabricated inscriptions were made by those who were especially cautioned to make their characters unlike any letter or figure with which they were familiar, and were limited to the use of straight lines and combinations of straight lines. None of them in a first attempt were able to observe the condition imposed, and they were not permitted to improve upon their first attempt.

For purposes of comparison these fabricated inscriptions are here copied with that of the Grave Creek Mound:



- No. 1. By a teacher and law student.
- No. 2. By a school girl.
- No. 3. By a druggist.
- No. 4. By a college professor.
- No. 5. The Grave Creek Inscription.

These all present equal evidences of being alphabetical and

have similar resemblances to the alphabets of the old world. In the fabricated inscriptions may be recognized characters found in the following alphabets: the Punic, Pelasgian, Oscan, Gallic, Phœnician, Etruscan, old Greek, Syriac, Servian, Ethiopic, Coptic, Gothic, Cypriot, Old British and Runic, and the second, third and fourth are as good ancient inscriptions, so far as inspection would disclose, as the Grave Creek Inscription, so that I am compelled to *conclude* that there is nothing in the form of the characters of the latter which require us to decide that they are old, that they are alphabetical, or if alphabetical that they are derived from any known alphabet.\*

This by no means warrants the conclusion that the stone is not antique; or if antique, that the inscription is not alphabetical. There are two ways in which its antiquity has been undertaken to be proved.

First, from the general appearance of the stone and of the lines of the inscription, if critically examined by competent persons at the time of its first production. But very great skill is required and very careful examination to warrant definite conclusions from opinions thus formed. Men of sound judgment and great experience in this country and in Europe have been deceived by impositions of this kind. Col. Wharton is evidently a conscientious observer, and I will not question his knowledge as to the difference between an ancient and modern inscription. But, unfortunately, he did not give this stone a critical examination at the time it was found, and it is evident from his statement that no one then deemed it of any great importance, and the question of its authenticity was not raised. He says, in a letter in the Cherry pamphlet, April 7, 1876: "The fact is, few of us then regarded the stone as of much importance, and none of us appreciated its value as a link in the chain of evidence respecting the people and the condition of those who built the mound." Again, "as to the stone having been a genuine relic there can be no more question than of the light of the sun: *no one who saw it doubted it.*" He also makes substantially the same statement in a letter to me of January 4th, 1878.

The failure to appreciate its great importance, if genuine, is also shown by the fact that five years after the opening of

\*During the discussion of the report, with these inscriptions copied upon the black board, C. C. Baldwin, Esq. of Cleveland, called the attention of the society to the evidence furnished by the inscriptions that they were not alphabetical. That the form of the characters was in many instances evidently suggested by the form of those immediately preceding, which would almost inevitably be the case if the writer was attempting to make a series of new and arbitrary characters, and which would be impossible if known and significant characters were used in a genuine inscription. The reader will readily observe how frequently in each of the inscriptions characters are evidently derived or suggested by those immediately preceding.

the mound, Schoolcraft "found this curious relic lying unprotected among broken implements of stone, pieces of antique pottery, and other like articles," in the chamber erected for exhibition of the articles found in the mound. (See transactions of American Ethnological Society, Vol. I, p. 387.)

Within a reasonable time after its discovery, it is evident it was not subjected to a critical examination by any one for the purpose of determining its genuineness. It could not well be when the question of its genuineness was not raised. This is greatly to be regretted. For this is the very first question the Archæologist should ask when he lights upon a new and unusual find: "Is it unquestionably genuine?" "Is it quite certain that no one is attempting to impose upon me?" Here doubt, suspicion, skepticism, are Christian virtues. And if it is precisely the missing link for which he has long been searching, and especially if he has been generally known to be seeking it, he should use the utmost caution, and be satisfied with nothing short of certainty.

The Grave Creek Stone was not so scrutinized, questioned and cross-questioned at the time of its discovery, as to justify the "proferit" of it now as evidence, or to warrant very positive conclusions from its appearance when first discovered.

The second mode of proving its authenticity is by the testimony of witnesses as to the position in which it was originally found. If found in the undisturbed earth in the center of the mound it is unquestionably as old as the mound. And now let the witnesses be heard upon this part of the case. Col. Wharton does not claim to know, except from inference, where the stone was found. He says (letter to Mr. Cherry): "I simply know it came out with the debris through the drift, as there was no dirt taken from the shaft that day, nor could it have been wheeled down the steep side of the mound." (Letter of Aug. 31st, 1877). Again, in a letter to Mr. Cherry, April 7th, 1876, he says: "In the forenoon they struck the center of the vault and brought out decayed wood, stones, rings, beads, mica and bones—one skull nearly perfect, found in Morton's work. Among this dirt was brought out the inscribed stone and picked up by one of us from the loose dirt. In a letter to me of Feb. 27th, 1878, he says: "The earth from the drift was brought out in barrows and dumped in a long line." \* \* "I think the stone was brought out of the drift from the fallen contents of the shaft. In this I may *possibly* be mistaken; when I first saw it, it was being handed to Dr. Guns with some of the earth still clinging to it." The *facts* to which the Colonel testifies are these: the manner of opening the mound, which he describes minutely and of

which more will be said hereafter, the wheeling out in barrows of the materials excavated from the mound, and the finding of this stone in the loose earth which had been wheeled out by the drift; and from these facts he very naturally infers that the stone was brought out with the earth from the center of the mound. But his conclusions are not testimony. The *facts* to which he testifies are that dirt was wheeled out of the mound, and that the stone was picked up by some one in such a place that all inferred that it came out with the dirt. This is all there is of his testimony on this particular subject.

Mr. P. B. Catlett is the next witness, and a very important one. He says (letter to Mr. Cherry, May 6th, 1876): "I was the man who found the stone. In answer to the question, 'Was there a matrix, or, in other words, an impression of the stone where it lay?' I would say that the engraved stone was *found in the inside of a stone arch that was found in the middle of the mound.* \* \* \* As to any one placing the inscribed stone there, it could not have been done." This testimony is very pointed and positive, and seems to imply that Mr. Catlett found the stone in the center of the mound. But I have learned as a lawyer that there are very few men who as witnesses will sharply discriminate between what they *know* and what they *infer* from what they know; and the province of a cross-examination of an honest witness—and I have no doubt that all these witnesses are honest—is to induce them to make this discrimination. Such a cross-examination by letter is not always satisfactory, but with a frank, candid witness, such as Mr. Catlett evidently is, it is ordinarily sufficient to induce the witness to make the discrimination sought. In answer to specific questions, Mr. Catlett in a letter to me of Jan. 9th, 1878, says: "I am the one that found it *first*. It was not in its original bed when first found, it was taken out of the stone arch in a wheelbarrow and emptied outside." This is in full accord with Col. Wharton's testimony, and establishes the fact that the stone was found in the loose dirt which had been wheeled out from the mound and dumped from the barrow. If it had previously been seen *in* the mound by any one, it is evident that it was thrown aside as of no value, or was sent out with the dirt for a purpose, to be found by some other party. These two witnesses are pointedly contradicted by Mr. A. B. Tomlinson, of Folsom, California. He says (letter to Mr. Cherry of Aug. 3d, 1876): "This stone was found in the upper vault, which was about thirty feet perpendicularly above the bottom of the lower vault. Each vault had been supported by timbers or rude stones. On the floor and under the confused mass of rock



were found all the relics of each vault. I was engaged in removing the rocks of the upper vault and at the same time gathering the relics. The relics lay confusedly, commencing near the east wall, and promiscuously inclined to the center of the vault. Being thus engaged and near the side of the vault the stone spoken of was found, *I removed it with my own hands, as I supposed, from its ancient bed.*"

As it was evidently impossible to reconcile this testimony with that of Messrs. Wharton and Catlett, I sent special interrogations of Mr. Tomlinson asking categorical answers. His reply, under date of Feb. 15th, 1878, gives a general and more definite history of the opening of the mound and of the finding of the inscribed stone as he now remembers the facts. I quote from this letter all that is pertinent to this investigation. He says: "I will give a brief statement of the events from recollection, with care not to state anything but what is clear to my recollection. It, however, occurred in the summer of 1838. Some twelve or fifteen years previous my father and uncle sunk a *rod* in the center of the concave that was on the top of the mound in search of a vault, believing it was caused by the filling up of a cavity below. \* \* \* In 1838 we commenced a horizontal tunnel at the base of the mound. On arriving at the center we found that the top of the vault had fallen to the floor, which was earth, and was firm, smooth, level and dry. On the floor and under a mass of loose unhewn rock were found the relics. My employment was to remove the rocks, and carefully to gather the relics, which consisted of two human skeletons; one was surrounded with 690 ivory beads and an ivory ornament about six inches long. Finding the cavity of this vault not to be sufficient to have caused the depression on the top of the mound, the vault being eight by twelve feet square and seven feet deep, we then drilled a hole upward from the center of the vault in search of another, which we found about thirty-four feet above the floor of the vault. We then ascended the mound to this distance of thirty-four feet, *where we commenced another tunnel*, and drove horizontal for the center, where we found the upper vault had fallen in as described of the lower; the floor being as described of the lower also, except its unevenness caused by the earth giving way by the fall of the lower vault (its dimensions about the same also), which was thirty-four feet below. On this floor and under the rocks as described in the lower vault was found the relics, consisting of one human skeleton which had been surrounded with copper bracelets, plates of mica beads, etc. The skeleton had been placed upright against the wall of the vault, and had fallen toward the center, which had settled



about eighteen or twenty inches, leaving the floor in a concave form, and, as I suppose, had drawn the skeleton about that distance from its original position. In the direction of the feet of the skeleton and near the wall, as my employment was to search the floor, *after having removed a rock from its ancient bed*, I was carefully removing the dirt, which was mostly of decayed timber, when I uncovered the inscribed stone. *The inscription being up, it took my attention.* I examined it; found it to be the work of the ancients; I then placed it with the other relics, and when prepared for public exhibition it was with the other relics. Having made the above statement at this remote period of my life (my age being near seventy), I have confined myself to facts according to recollection, and believing also from the facts above stated that the inscribed stone was placed in the vault with and at the time the skeleton was, for *I know that I was not deceived in the antiquity of the bed of the rock nor of the dust under which the inscribed stone lay.*"\*

Were there no other testimony in the case, we should be warranted in the conclusion that the mound was opened by a drift in the natural surface to the center, a hole drilled upward thirty-four feet, disclosing a second vault at that elevation, to which a second horizontal drift was carried, and that this inscribed stone was found by Mr. Tomlinson on the floor of the upper vault, covered with the dirt of decayed timber and beneath an unwrought stone imbedded in the floor of the vault. As I called Mr. Tomlinson's attention in my letter especially to the well or shaft said to have been sunk from the top of the mound, his silence in regard to it, while undertaking to give a full account of the opening, warrants the inference that he intends to say no such well was sunk. But it is certain that he is mistaken in this and in many other particulars.

Schoolcraft, who visited the mound in 1843 and gathered the facts in regard to the opening, learned that the original plan was to "open a gallery from its northern base to its center to be intersected at its terminus by a perpendicular shaft from the center of the depression in the plane of its apex." That the drift at the base was first opened and a shaft ten feet in diameter sunk from the top, and, at the time

\*Attention is called to a few statements of this letter which clearly indicate an indistinctness of memory in regard to the actual occurrences:

1st. At the end of a drift, carried to the center of the mound, and of a height (described by all) barely sufficient to enable a man to stand erect, a hole could not be drilled thirty-four feet upward without the special preparation of rods made in sections and fastened by screws or some similar devices. The preparation of such rods is improbable and if made would be remembered and noted by some of the witnesses.

2d. If the inscribed stone was found in the bed of a large stone imbedded in the bottom of the vault, it would not also be covered with the accumulated dust of the vault.

3d. It is exceedingly improbable that any one in the dimly lighted vault would detect the inscription upon such a stone as this before picking it up.

of his visit, he found a "circular hollow column of brick rising from the chamber where the lower vault was situated, and occupying the span of the shaft." (See his report in Vol. I, Transactions of American Ethnological Society.) Col. Wharton is equally positive in this particular. In his letter to Mr. Cherry, April 7th, 1876, he says: "They commenced by an entry on the north side and subsequently by a shaft from the top." In his letter of Aug. 31st, 1877, to Mr. Cherry, he says: "A drift was run from the north side of the mound high enough for the tallest man to walk after it was arched with brick, say eight feet high; this was run to the center, where they came to decayed wood which was evidently put up in a square box or enclosure, a shaft was sunk from the top till they struck the same evidences. Then Dr. Clemens was sent for to see it opened." \* \* \* Dr. Clemens and Tomlinson, perhaps others, occasionally went into the drift, but did not stay long as they were in the way of the workmen. As the lower grave was taken out the dirt gradually fell, until at last the whole came down, opening a communication *between the shaft and drift.*"

After the reception of Mr. Tomlinson's letter I again wrote to Col. Wharton, making among others the specific inquiry whether more than one drift or gallery was carried into the mound. In his answer of February 27th, 1878, he says: "There was but one drift entry and that directly, or within a few degrees from the north side."

Now it is very certain that Mr. Tomlinson is mistaken and that he did not find the inscribed stone at the end of a drift which never existed.

The condition of the mound when visited by Schoolcraft, the facts as he then learned them, the testimony of Col. Wharton and Mr. Catlett are in complete accord and conclusively prove, that a drift was carried into the mound at the base from the north side disclosing a vault with various relics at the center; that a shaft was sunk from the top of the mound to about the top of the upper vault; that the center of the mound caved, carrying into the end of the drift the upper vault and its contents; that the materials and contents of both vaults were carried out at the drift; that the inscribed stone was not discovered in the mound, but in the dirt wheeled out from the drift after it was dumped from the barrow; or if found in the mound by any one, or seen in the mound, it was sent out with the dirt without remark, for the purpose apparently of having it discovered by some other person.

The thorough contradiction of Mr. Tomlinson by all the other witnesses must be explained by each one in his own

way. To me it implies no impeachment of Mr. Tomlinson's honesty—legends grow, they are never invented. Neighborhood gossip is almost always the result of unconscious accretions and alterations of a story as it passes from mouth to mouth. Ordinarily the man who has repeated an anecdote of his boyhood for forty years would not recognize the story if he should find it written down as it actually occurred. The more interest we take in an event long past, the oftener we have repeated it and conned it over the more likely are we to substitute our own mental processes and modern thoughts in place of the actual memory of events. There is nothing more uncertain than human testimony in regard to events long past, and the greatest care and the highest degree of skill is required in properly sifting and weighing it. Applying ordinary rules applicable to conflicting testimony we must find that the first point when the existence of this inscribed stone is disclosed to us by the evidence is the time when it was picked up by Mr. Catlett from the earth which had been wheeled out of the mound, so that the evidence that it came from the mound is entirely circumstantial and inferential.

All the evidence it seems to me compels the following conclusions:

1st. The inscription is not necessarily to be regarded as alphabetical.

2d. If it is assumed to be alphabetical it cannot be referred to any known language.

3d. It is precisely of such a character as would be the result of an ordinary attempt to manufacture an inscription.

4th. Its manufacture is within the capacity of any laborer of ordinary intelligence who may have been employed in the work of exploring the mound.

5th. At the time of its discovery there was no proper scrutiny of the inscription to determine whether it was of recent manufacture or not.

6th. The evidence that it came from the mound is by no means conclusive.

7th. Its history is such that the subsequent discovery of unquestioned ancient inscriptions with similar characters would warrant us in concluding that this also is ancient.

8th. Until its authenticity is thus fully established it ought not to be regarded as *any* evidence of the character, ethnical relationship or intellectual culture of the builders of the mounds.

#### ADDENDUM.

After the above was written I received from Col. Wharton a correction of his statement in regard to the number of

drifts made into the mound, which does not in any manner tend to modify the conclusions reached above, but indicates Col. W.'s anxiety to be strictly accurate in all statements of facts. He says: "In my answer to your question I said there was but one drift in the Grave Creek mound. *There was not when the stone was found.* I learn from Mr. Hurn who lived there that Mr. Tomlinson subsequently made one and perhaps two higher up, and that all have fallen in."

I have also received a second letter from Mr. Tomlinson, written evidently after he had read the letter in Mr. Cherry's pamphlet (dated March 8th, 1878), in which he puts himself more decidedly in conflict with Col. Wharton and Mr. Catlett, and criticises sharply the statements of some of the other parties. In it he insists that the stone was found over twenty days after Col. Wharton's visit. His letter is not written with the exactness and clearness of statement which is desirable, but a fair and reasonable construction of it implies that he intends to assert positively that neither Col. Wharton nor Mr. Catlett were present at the time or on the day on which the stone was found. This letter strengthens the conclusions reached before its reception.

The originals of all these letters will be turned over to the Society, if its officers will undertake to secure their preservation. The following is a quotation from Mr. Tomlinson's last letter:

"But the time that intervened from Mr. Wharton's visit, on our striking the lower vault and the finding the stone, I can only give from circumstances. Now the removing of rubbish from within the lower vault and carefully gathering the relics must have occupied at least five or six days (there was in the rubbish no rotten timber, it all having decayed to dust, neither was the inscribed stone and its accompanying relics here to be found). The drilling upwards from the lower vault in search of another must have taken four days; measuring the altitude, position of thirty-four feet, to strike the upper vault with a tunnel took perhaps one day; driving the tunnel about fifty-five feet must have taken twelve or fifteen days. You see that twenty-three or twenty-five had necessarily elapsed since the clearing up of the lower vault, and the stone with its accompanying relics not yet found. Three persons were all that were required to drive the tunnel. Wishing not to deface the mound, we drove it low and narrow, barely wide enough for a wheelbarrow to pass. Now the inscribed stone with its accompanying relics was found at the inner end of this contracted passage, in the upper vault, in the way that I have heretofore described. \* \* \* So Mr. Wharton's visit must have been at the clearing up of the lower vault, which occurred at least twenty-four or twenty-five days previous to the finding of the stone." \* \* \*

## THE BIBLE NARRATIVE AND HEATHEN TRADITIONS.

*The Traces of the Facts mentioned in Genesis in the Traditions of all Nations.*

BY REV. STEPHEN D. PEET.

One of the most interesting subjects of modern study is the traditionary lore of the various races of earth.

There is a wonderful charm in these written and unwritten tales. They are not only poetical and beautiful but often very suggestive. In fact there is a depth of philosophy in them which has made them the subject of study to the most intelligent and thoughtful.

In the three-fold division of mythology, tradition and Folk-Lore, no department of literature is more important. It is, in fact, a department of science as well as of literature, and in its bearings on ethnology and the more general subject of anthropology, it is worthy of profound attention.

It is, however, almost a new and unknown department. Comparative mythology has, it is true, in times past, assumed considerable importance. Not only was this the case in the early days of the Christian era, when the mysteries of the cabiri were the subject of study among the learned, but even after the reformation, when Joseph Scaliger and other writers revived the occult subject. Later, too, than this, the comparison of the classic mythology with the sacred narrative became a subject of study, and the Abbe Bannier, Jacob Bryant, the Abbe Pluche and others wrote at length upon the topic. Still later, Sir William Jones, in his extensive travels and by his familiarity with so many languages, became acquainted with the mythology and the traditionary lore of Arabia and of the East Indies; and still later, the studies of Champollion and Sir J. G. Wilkinson, brought to light the ancient but long buried literature and mythology of Egypt and the regions on the Nile; and the translation of the Edda, and the publication of that charming book, Mallett's Northern Antiquities, also disclosed many delightful pictures, and wonderful myths, among the Icelandic Sagas.

The Scandinavian mythology was found to be as poetical and as interesting as the classic, and, in fact, it was discovered that there was a wonderful similarity between the mythologies of the distant East and of the distant West, and that the same stories which had charmed the ears of the Orientalists in their warm sunny home, were only repeated in the frost-regions of the distant North. If the language was different,



the drapery of thought having been borrowed from the different surroundings, yet there seemed to be the same basis of fact.

It was afterward, however, discovered that the American races also possessed a wealth of traditionary lore which was as charming, and as striking in its resemblances, as that of the Orient or of the classics, and it was ascertained that the realm of comparative mythology was not confined to the Aryan race nor even to the Eastern Hemisphere.

Students, as they read the Scandinavian and then the American myths, were surprised at their striking similarity. Such was the resemblance that the reader was almost inclined to suppose that the Icelandic stories had been carried westward and repeated to the tribes of Aborigines by some pre-historic wanderers, or that some unknown intercourse between the two hemispheres had existed. Thus the volumes of "Algie Researches," by Schoolcraft, were found worthy a place beside the Norse Tales or even the writings of Homer.

Still later there appeared another development of the same great subject. The researches of that remarkable man, Brasseur de Brebourg, threw up before the notice of the civilized world, that wonderful waif of literature called Popal Voh, and it was found, that far to the southwest, among the half civilized races of Central America, there were myths and strange traditions which carried one's mind, not back to the Norse regions, but to the Orient; and again the resemblances between the traditions of the Eastern and Western Hemisphere surprised the students.

The depth and richness of American mythology proved remarkable, and there were beauties and wonders in it almost as striking as those of the Scandinavian or the classic.

It remained, however, for that learned Sanscrit scholar, Max Müller, to show the value of these various collections of myths. In his "Chips from a German Workshop" he has shown that comparative mythology is really as important in the study of mankind as is comparative philology. He has given a comprehensive sketch of the various religions of the East, with their earliest history and development, and has at the same time referred to the many works on the Folk-Lore and Nursery Tales of other lands.

He has shown the value of History in bringing to light the earliest religious ideas of mankind, and yet has suggested the necessity of a philosophic and scientific study of the subject. He says, "History with its dusty and mouldering pages, is to us a sacred a volume—as sacred as the book of nature. What compels men in the midst of these busy times to sacri-

\*Chips from a German Workshop, Vol. II: p. 3, article "Comparative Mythology."



fice their leisure to a subject apparently so unattractive and useless, if not the conviction that in order to obey the Delphic commandment—in order to know what man is—we ought to know what man has been.”

Now it is to this view of the importance of the earliest history of mankind in throwing light upon many of the great problems of science to which we would call attention.

The history of those distant ages and distant men assumes a new charm as soon as we know that it tells us the story of our own race: of our own family, nay of ourselves.

Many things are still unintelligible to us, and the hieroglyphic language of antiquity records but half of the mind's unconscious intentions.” Yet there are many things to be learned by comparing these mystic phrases, and it may be that we shall yet gain an interpretation of these earliest records which throws a flood of light on the dark problem of man. Even these traditions and beliefs which were at the time not half understood, may in the light of later days, become significant of many important lessons.

There is a deep philosophy even in the unconscious workings of the human mind, and even the fragments of thought are sometimes valuable as giving the key to the great arch which is so mysteriously being constructed. It may be that traditionary lore will yet prove to be a sort of universal language among the human race—a language not of words but of conceptions, and that these conceptions have become mingled with the earliest thoughts, and views, and practices of the various races, and then expressed themselves in their myths.

Nor does it matter whence these traditions sprung, whether from a common historical origin or from the inspiration of nature—the teachings of that great-good mother who teaches all her children alike. It is not essential whether we hold to the opinion of a nature basis for them all, or maintain the Historical origin; the resemblances of these traditions is really the point for us to consider.

We have in this essay, however, taken the position that these resemblances are evidences that there was a common historical basis or origin to them, and yet in taking this position we do not enter into a discussion of the subject with any controversial spirit but with a sincere desire to know what is the truth.

The difficulty, however, is in the magnitude of the subject; no department of study involves a more extensive and almost universal range of reading than does this.

To go over the many volumes which have been written on Folk-Lore alone is a formidable task, and yet no conclusion

can be reached, except as this field is thoroughly traversed. Max Müller has mentioned many of these, such as Kelley's Folk-Lore, Dasent's Tales of the North, Dasent's Deccan Days, Tales from the West Highlands, Popular Tales from the Norse, Zulu Nursery Tales and others, and has found in them certain traditions which could be explained on no other supposition than that of a common Historic origin.

The number of books on this subject is, however, increasing rapidly, and scarcely a periodical appears but that mention is made of some new volume. The researches of antiquarians, the observations of missionaries, the testimony of intelligent travellers and explorers, are constantly furnishing new material.

It is said that Jacob Grimm was the first to mention the importance of collecting all that could be saved of popular stories, customs, sayings, superstitions and beliefs, and his Dutch Mythology is a storehouse of such curiosities; but since his day it would seem as if every land had been searched for these strange waifs of literature. Traditionary lore has been gathered from many of the most distant lands, and at the same time the customs of different races have been studied to see what traditional or what historical origin there was to them.

The simplest customs even of modern days, such as dancing around the May-pole, the various religious and burial customs, have thus proved to be connected with tradition, and many of the symbols which are so frequently associated with religious forms, have been traced back to very early times. The works on this subject are numerous and need to be studied.

There are also numerous books of travels, travels in Africa, in Siberia, Independent Tartary and among various wild tribes and uncultivated nations, all of which it is important to consult.

The works on comparative mythology are also numerous. Many of these are quite recent, such as "Cox's Aryan Mythology," and "Brinton's Myths and Myth Makers of the New World," and others, and yet the various Geographical and Geological Surveys are constantly gathering material for new works. In ancient history, also, a vast and increasing field opens before us, wherein we are to search for the original facts on which tradition is based. Not only are the ancient works of Herodotus, Diodorus, Siculus and Plutarch to be consulted, but the later investigations of Rawlinson, Layard, George Smith, Gladstone, Grote and many others.

In the line of comparative religions there are also proofs on the subject, and the works of James Freeman Clarke,

"Ten Religions," of Hardwick, "Christ and other Masters," and many others, need to be studied, as well as the older works of Davidson, Prideaux, Smith's Patriarchal Age, Warburton's Divine Legation.

Now, to sift all this vast mass of erudition, and to gather material from the many different departments of history, ethnology, mythology, and to say that we have arrived at definite proofs on this subject would be presumptuous indeed. Grote, the historian, bears witness to "the uselessness of digging for a supposed basis of truth," and Max Müller himself finds it very difficult to arrive at definite conclusions in reference to many of the myths and traditions even of the old world.

In studying the subject, however, we have not undertaken to trace the resemblance of all this vast and varied amount of material. This would be a task for a life time. The largest part must necessarily be left to its own crude and unclassified condition, and other generations will need to trace the ethnological and the historical lines, or establish the ethnic philosophy which may account for the analogies and resemblances which so extensively appear. There has, however, been suggested to us a way of studying the subject which has at least been helpful and instructive.

It is well known that the Bible is the oldest book in the world, and in reference to the traditions of the ancient races at least, it is very instructive.

In reading the numerous volumes of that rare old work on comparative mythology, "Bryant's Analysis," it was represented that there were certain particular facts which were first recorded in the Bible, and which could be recognized in nearly all the mythologies of the East, and it occurred to us that possibly these same points or facts might also be traced in the traditions of other and even distant lands. We have confined our attention then to the earliest recorded facts of the Bible. It remains for us to show that these many resemblances of certain traditions among nearly all races to the scripture account can be explained on no other supposition than that of a common historic origin.

The scientific proof may be wanting, yet we maintain that the various cosmogonies contained in so many different traditions, the universal prevalence of a certain form of tree and serpent worship, the very common tradition of a deluge, and the various traditions of ancestral history and migrations, are all strong proofs that the same facts recorded in the Bible are at the basis of the resemblances. We may call the Bible story an allegory, or believe, as Tyndall professes to, that it is a poem; or we may suppose that the processes

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

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CIRCULAR IN REFERENCE TO AMERICAN  
ARCHÆOLOGY.

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SMITHSONIAN INSTITUTION,  
WASHINGTON, D. C., *February 1, 1878.*

For more than a quarter of a century, the Smithsonian Institution has been engaged in researches concerning the antiquities of America. As the result of its efforts many important memoirs have been prepared, and published in its Annual Reports and in the Contributions to Knowledge; and the National Museum, in charge of the Institution, has become the depository of the largest and most valuable collection of American aboriginal relics in the world.

In continuation of previous effort in the same direction, the Institution contemplates the publication of an exhaustive work on American Archæology, with numerous illustrations. This will be accompanied by a series of maps, exhibiting by appropriate signs and colors the localities and distinctive characteristics of *ancient mounds and earthworks; shell-heaps; cave and cliff-dwellings; masonry; sculptured slabs or carved images; inscriptions and rock paintings; graves and cemeteries; aboriginal quarries and salt works; caches or deposits of objects in large quantities; workshops or places of ancient aboriginal industry; ancient roads or trails; and reservoirs and aqueducts.*

To this end the Institution desires to collect from every available source, whatever is now known, or can be ascertained by special investigation, of the antiquities of North America; and it invites the coöperation of all into whose hands this circular may fall. If the recipient has not the time or the disposition for such inquiries, he is requested to hand it to some one in his neighborhood who is known to be, or who is likely to become, interested in such matters, with the request to correspond directly with the Smithsonian Institution upon the subject.

#### SPECIAL MEMORANDA.

In giving a description of any of the objects named above, great care should be taken in defining *the exact locality, the site or station, the number and manner of grouping, the shape and size, the internal structure, and the contents.*

1. *Locality.*—In locating aboriginal remains, the State (or territory,) the county, the township, and the distance and direction from the nearest post office or railway station should be distinctly given. In addition to this it is advisable to name any well known stream, hill, bluff, or other remarkable natural feature in the immediate vicinity. Explorers usually refer a “find” to the land of some individual. This may answer for a secondary indication; but, inasmuch as lands are constantly changing owners, it should not be too much relied upon.

2. *Site or Station.*—Nearly all aboriginal constructions seem to have been erected with reference to some natural advantage; for example, upon a hill for observation or defense, by the water for fishing purposes, upon an alluvial plain or terrace for convenience to tillable land, &c. Again, there is reason to suppose that geological changes, such as the shifting of river beds, may have taken place since these erections were made. The site of the remains should, therefore, be described with reference to the surrounding

country, and to the natural advantages and geological history of the location.

3. *Number and Grouping.*—However abundant earthworks and other aboriginal remains may be in any locality, on careful inspection, they will generally be found in groups, having some relation to each other, to the points of the compass, or to the topographical features of the country. An accurate survey and plot, indicating each member in its place, is the most instructive method of representing the facts. Where this is impracticable the individual constituents should be carefully counted and their relative location sketched as definitely as possible.

4. *Shape and Size.* In different portions of North America the earthworks and other structures exhibit certain conventional shapes, notably the animal mounds of Wisconsin. In order to ascertain the geographical distribution of typical forms it is very desirable to obtain ground plans and sectional drawings as accurate as circumstances will allow. In several States surveys of the most celebrated works have been made, and others are in progress. The plots of Moses Strong (Smith. Rep., 1876, 424-432) may be taken as models for ground-plans. Cross-sections and elevations are important in conveying an idea of complicated works. It is well, moreover, to observe the effect of weathering and of cultivation. Notice should be taken, also, of the age of trees growing upon the work or upon lands in the vicinity supposed to have been cleared by the ancient inhabitants.

5. *Internal Structure.*—The study of the structure of an aboriginal work has reference to the nucleus or central portion, and to the enveloping mass. Leaving the former to be considered under the next heading, whatever is said here concerning structure will relate to the latter only. The internal structure of aboriginal remains depends upon their design and the material at hand, quite as much as upon the conceptions of their builders. In some the mass is homo-



geneous throughout; while in others there are layers of clay, mould, sand, and stone, varying in thickness and mode of distribution. By sinking a shaft from the centre of the apex, or by cutting a ditch on a level with the ground, from the circumference toward the centre, the structure will be revealed.

6. *Contents.*—The contents of earthworks and other ancient structures vary with the purpose which they were designed to subserve, with the locality, and, in the case of burial mounds, with the social standing of those interred within them. The greatest diversity of contents is found in the mounds of the Mississippi Valley, which, indeed, have been named burial, sacrificial, domiciliary, and defensive mounds, according to the end which they seem to have served. The most desirable objects among the contents of these mounds and other earthworks are the human remains. In order to preserve the crania and bones, as well as bone implements or other friable objects, they should be covered with boiled oil, or with a weak solution of warm white glue. When this has dried sufficiently, the process may be repeated until the tissue is completely hardened. Small fragments may be immersed in the liquid at once. Where it is practicable to save crania and other fragile objects entire, the glue may be applied before they are removed from the earth. Dr. Otis, of the Army Medical Museum, has succeeded in taking out a block of earth containing the skull, and by repeated washings and application of the glue has saved some very frail specimens. The Société d'Anthropologie de Paris has issued two pamphlets of instructions, indispensable to collectors of human remains, viz., "*Instructions Craniologiques et Craniométriques*" and "*Instructions Générales pour les recherches Anthropologiques.*" With regard to the nucleus and to aboriginal relics contained therein, the explorer should examine every object in the position where first discovered, with reference to the original level of the ground, to the structure of the tumulus, and to the objects buried with it. He should disregard no object however insignificant it may seem, and record

with the most scrupulous accuracy whatever is observed. With reference to shell-heaps as well as to mounds there is evidence that the work of erection was abandoned and resumed at longer or shorter intervals, and that a long time elapsed between the commencement and completion of some of them. This would be indicated by a difference in the character of the deposits, by a change in the mode of burial, and by the more or less decayed condition of the bones found in each layer. Many interesting problems concerning race, migration, commerce, cannibalism, cremation, trepanning, disease, &c., are to be solved by an exhaustive comparison of the contents of these aboriginal constructions.

In addition to original records and descriptions concerning the objects enumerated above, the Smithsonian Institution desires to obtain copies of all books, memoirs, pamphlets, extracts from periodicals, and newspaper clippings having any relation whatever to American archæology. It also desires to be informed of the locality of all collections of American antiquities, however small, whether in private hands or in public museums. Special information concerning these collections, the number and character of the most perfect and choice specimens, together with photographs, tracings, or other drawings of the same, will also be valuable, and may enable the Institution to publish a directory of all the archæological collections in the United States.

In conclusion, the Smithsonian Institution respectfully and urgently invites contributions of specimens of aboriginal art and antiquities from all sources and from every part of the country, to be placed in the National Museum at Washington, and preserved permanently in a fire-proof building under careful supervision. The object in view is not merely to possess every variety of article, but also to ascertain the geographical distribution of each form. In this manner, important information may be obtained as to the migrations and commerce of the ancient races.

All specimens contributed will be duly accredited to the donor

in the reports of the Institution, in the proposed work on American Archæology, and on the labels of the specimens; so that, wherever the object may be, the source whence derived will be known. Instructions will be given by the Institution, on application, as to the best method and route of transmission of such collections, the freight on which will be paid on receipt in Washington.

JOSEPH HENRY,

*Secretary Smithsonian Institution.*

INFORMATION DESIRED AS MATERIAL FOR AN ILLUSTRATED WORK ON THE ARCHÆOLOGY OF NORTH AMERICA.

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Name of Correspondent,

Occupation,

Post Office Address,

Date of Communication,

GENERAL INQUIRIES.

1. Are there any remains of ancient aboriginal structures, such as mounds, earthworks, shell-heaps, &c., in your vicinity?
2. Are there any other indications of a former occupation of the region by the aborigines?
3. Where are they located? Give State, county, nearest post office, distance and direction from some well known natural feature, and the name of the owner of the property at the date of the report.

MOUNDS AND EARTHWORKS.

4. How are they situated with reference to streams and springs of water, elevations, tillable land, or other natural features?
5. What changes, if any, have taken place in the streams, forests, and other surroundings since their erection?
6. Are the mounds isolated or in groups?
7. If the latter, what is their number and relative position? Furnish a sketch or plan, however rude it may be, with the individual mounds of the group, numbered. A topographical survey is most desirable, where it is convenient.
8. What is the size and shape in ground plans, in section, of each

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Answers to the accompanying questions may best be made by reference to the numbers without repeating the interrogatories.

member of the group? Of irregular and animal mounds a sketch with measurements of the different prominent parts should be given.

9. Of what material are they composed?
10. How is this material arranged, especially near the centre?
11. What is the construction of the centre of the work?
12. Where was the material used in the formation probably obtained?
13. Have any of the mounds been explored? Designate which ones on a plat.
14. If explored, what archæological objects were found in them?
15. What have become of those objects?
16. If any account of them or of the exploration has been published, where, and by whom?
17. Have the mounds or earthworks been injured by weathering or by cultivation?
18. Are trees growing upon any of them? If so, of what kind and dimensions?

#### SHELL-HEAPS.

19. What is the number of shell-heaps in your vicinity?
20. What is the location of the deposits with respect to the water and other natural features?
21. Has there been any change in the shore to submerge them, to carry a portion of them away, or to bring them above the water line and away from the beach?
22. What is the length, breadth, and depth of each?
23. Of what are they composed? Collect specimens of each species of shells.
24. What is the nature and depth of the superincumbent soil?
25. What vegetable substance used as food or for other purposes occur in them?
26. What animal or human remains have been found in them?
27. Were the bones whole, charred, or fractured?

28. Were any wood, bone, shell, or stone implements, or ornaments, or pottery discovered?

29. What were the characteristics of these objects? Make drawings or photographs if practicable.

#### CAVE AND CLIFF-DWELLINGS.

30. Have any caves or rock-shelters in your section of the country ever been used by the aborigines for a dwelling?

31. What advantages do these places furnish for defense, for accessibility to water, game, and other means of living?

32. Are there any indications of an attempt to improve or strengthen these places?

33. What relics of man or of his works were found, and under what conditions?

#### MASONRY.

In the southwestern portions of our country and from thence to the Isthmus, remains of stone and adobe structures are to be seen. If any have been found in your section—

34. What is the material of which they were built?

35. What uniting substances, if any, have been used?

36. What is the plan and probable use of the structure?

37. What attempts were made at ornamentation?

38. Is there a central excavation or estufa?

39. Was the building more than one story high?

40. How is it situated with reference to protection and convenience?

41. What relics were found in it?

#### SCULPTURED SLABS AND CARVED IMAGES.

In portions of the Mississippi Valley specimens of rude statuary have been found, and further south in Mexico and Central America large slabs occur covered with sculpture.



42. If sculptures occur near you, under what conditions were they found?

43. With what other remains were they associated?

44. If slabs, have they been injured by weathering?

45. Has any account, illustrated or otherwise, been published?

46. If they have been removed, in whose possession are they now?

#### ROCK-PAINTINGS AND INSCRIPTIONS.

On cliffs and boulders carved and painted inscriptions have been found.

47. If any occur in your neighborhood, what is the precise location?

48. Is the design executed with paint or in sculpture?

49. What figures are represented? Give a sketch or photograph if practicable.

#### ABORIGINAL BURIAL.

50. Are the dead found in isolated graves, cemeteries, ossuaries, caves, or mounds?

51. Are the graves which are in groups arranged according to any plan?

52. Are they on a level tract or on a slope?

53. If the latter, what point of compass does it face?

54. Does each grave contain the remains of more than one individual?

55. Were the bodies buried in a sitting posture, stretched out, lying on the side and doubled up, or were the bones mingled indiscriminately in the grave?

56. Was the head or face of the dead directed to any particular point of the compass?

57. Are the remains simply buried in the earth, or are they en-

closed in stone circles, in cysts, in earthen jars, or in some other receptacle?

58. In what state of preservation were the bones found?

59. Are the graves deep or shallow?

60. Have they been injured by weathering?

61. Is there any evidence of dessication, mummification, cremation, or other special treatment of the remains of the dead previously to interment?

#### ABORIGINAL QUARRIES.

62. If any ancient quarries have been discovered, what is the material which was sought by the aborigines?

63. What is the locality, depth, and form of the excavation?

64. What evidence exists of the manner of detaching and working the material?

65. What and what kind of mining tools have been discovered?

#### CACHES.

Various kinds of aboriginal implements have been found deposited in large quantities as if designedly.

66. If caches have been found, what was the number, and character of the contents?

67. Where and under what circumstances were they found?

68. Were the objects kept together by the discoverer, or scattered? If the former, in whose possession are they now?

#### WORKSHOPS.

At certain seasons of the year some of our western tribes encamp in the neighborhood of deposits of jasper, chalcedony, and other minerals valuable for arrow-making, and manufacture a sufficient

quantity of points, knives, &c., to last them a long time. The ground around such places, for several acres, is covered with splinters, cores, spoiled points, and flaking tools.

69. Are there any traces of the manufacture of stone implements or pottery in large quantities in your vicinity?

70. If so, what is the character of the refuse?

71. Has this refuse been subjected to the action of running water, and what is the method of its aggregation under such influence?

#### ROUTES AND TRAILS.

72. What vestiges, if any, exist in your section of ancient trails, carrying places, fords, bridges, stone-heaps, land-marks, and whatever else would throw light upon ancient migration and commerce?

#### RESERVOIRS AND WATER COURSES.

73. Have any attempts been made by the aborigines of your region to construct aqueducts or reservoirs for water?

74. Do the aqueducts show any especial skill in following the natural level?

75. What is the length and other dimensions of the channel?

76. Were any attempts made at irrigation?

77. What is the size of the reservoirs, if any exist?

78. How are they lined?

79. How were they supplied with water?

#### BIBLIOGRAPHY.

80. Do you know of any original memoirs or surveys of these remains that have not been published? Please send the name and address of the individual who has them in possession.

81. Have any accounts of the antiquities in your neighborhood been published by your local press? Can copies be procured?

82. Have they been described in any other publication, such as magazines, proceedings of learned societies, &c.?





















83. Are there any public or private collections of antiquities in your locality?



















84. If so, do they contain rare and valuable specimens?

85. Have these specimens ever been figured? Drawings or other representations of those that are rare will be gratefully received by the Institution.

86. What specimens can you furnish as a contribution to the National Museum?

The following symbols, most of which are taken from the international code of Mm. Mortillet and Chantre, published in the Smithsonian Report for 1875, are designed to secure uniformity of illustration and facility of reference:

-  Stone heap, cairn, landmark.
-  Shell heap, kjökkenmödding.
-  Mound, or tumulus; dotted, if a stone mound.
-  Mardelle, pit, excavation, dug-hole.
-  Mound enclosing a cist or chamber.
-  Circumvallation, earthwork.
-  Earthwork enclosing tumuli. See symbols for number.
-  Tumulus surmounting a work and ditch.
-  Longitudinal earthwork, the line beneath indicates extension.
-  Cave dwelling or cliff structure.
-  Communal dwelling, pueblo.
-  Masonry, wall of stone or adobe.
-  Sculptured slabs or carved images.
-  Rock-paintings and inscriptions.
-  Hollowed stone, cup cuttings.
-  A row of standing stones, carved slabs, &c.
-  A circle or enclosure of the same, the dots may apply to other symbols.
-  Burial place, method not known.
-  Inhumation, at length.
-  Inhumation, in a doubled up position.

-  Inhumation, in a sitting position.
-  Cremation.
-  Cemetery, the stars may apply to any burial symbol.
-  Ossuary, many bodies in one tomb.
-  Sepulchral mound, the mode of burial to be added.
-  Cemetery mound, many separate graves.
-  Ossuary mound.
-  Cave tomb.
-  Quarry.
-  Cache, intentional deposit of many objects
-  Workshops, places of ancient industry.
-  Road, trail, ancient highway.
-  Reservoir.
-  Aqueduct.
-  Explored, the circle may apply to any symbol.
-  Several, the plus may apply to any symbol.
-  Many, the two marks indicating a large number.
-  Definite number, the figures to the right indicate the exact number.



Information, in a ring position.

Continued.

Continued, the stars may apply to any partial symbol.

Continued, many letters in a ring.

Continued, many letters in a ring.

Continued, many letters in a ring.

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120-16

# CANADIAN NATURALIST

AND

## Quarterly Journal of Science.

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### ON THE ORIGIN OF SOME AMERICAN INDIAN TRIBES.

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#### SECOND ARTICLE.

In the former paper I indicated the existence of a broad line of distinction dividing the aboriginal languages and peoples of this continent into two well-defined groups, the one Malay-Polynesian, the other Turanian in origin. It is with the latter that I now propose to deal. The Turanians of America stand in geographical relation to Canada chiefly through the Wyandot-Iroquois family, two important divisions of which, the Hurons and the Six Nations, occupy no inconspicuous position in the early history of the country. Originally this family extended as far south as the Carolinas, and the isolation of the northern Iroquois in the midst of an Algonquin area is due to that intrusive character and love of conquest which made the warlike Mohawk and his fellows the terror of other Indian tribes. The Assineboins or Stone Indians, whose name is Algonquin, are also Canadian, dwelling upon the banks of the Red River and its tributaries, but they are Dacotahs belonging to the great family commonly known as Sioux, most of whose tribes are found west of the Mississippi. Mr. Lewis H. Morgan, who has investigated many questions relating to the aboriginal population of America, maintains that the Wyandot-Iroquois and the Dacotahs are branches of the same original stem, and all that I know

of the two families confirms his opinion. A third great family which has no representative in the Dominion is brought into relation with the Iroquois and Dacotah classes by Dr. Latham, who, for comprehensiveness of view and extent of knowledge, has found no superior in the field of American ethnology. This is the Cherokee-Choctaw family, whose tribes, among which Dr. Latham counts the Catawbias, Woccoons and Caddos, originally extended from Tennessee to Florida. I unhesitatingly state that the Iroquois, Dacotahs and Cherokee-Choctaws are of Turanian or Northern Asiatic origin.

Commencing with grammatical forms, these families agree in making use of postpositions exclusively, thus differing from the Algonquin and its parent Malay, and agreeing with all the varieties of Turanian speech. In the order of the verb, a second point of difference from the former and of accordance with the latter languages equally marks Iroquois, Dacotah and Choctaw; the temporal index follows the verbal root. The accusative precedes the governing verb in Dacotah and Choctaw, and, as I have already stated, the same principle finds illustration in Iroquois. This is one of the radical distinctions which characterize the Turanian as contrasted with the Malay grammatical system. Once more, the Iroquois, Dacotah and Choctaw languages prepose the genitive to its governing noun, which, as Dr. Edkins says in *China's Place in Philology*, is essentially Turanian. In the use of postpositions, the postposition of the temporal index to the verbal root, the preposition of the accusative to its verb, and of the genitive to its nominative, four important features in a grammatical system, the Iroquois, Dacotah and Choctaw languages cut themselves off from all Malay Polynesian relationship and claim affinity with the great Turanian family. But the great Turanian family is very large and very widely spread over Europe and Asia. Its Finnic class includes the Finn, Lapp, Esthonian, Vogul, Mordwin, Magyar, and other European and Western Asiatic dialects. In its Turkic class we find the Turk, Uigur, Kirghis, Bashkir, Yakut, and many more. The Mongol contains the Mongol, Khalkha, Kalmuk, Buriat, &c.; and the Tungusic, the Tungus, Lamute and Mantchu. Then in Thibet, Hindostan, and the Indo-Chinese area, many classes are found, the most important and best known of which is the Dravidian, embracing the Tamil, Telugu, and other dialects of southern India. Leaving the Siberian Samoyeds, Yukahiri and Yeniseans

out of account, we find in north-eastern Asia an extensive group of languages spoken by the peoples whom Dr. Latham has classed as Peninsular Mongolidæ, languages that in all their leading features are Turanian. Such are the Koriak-Tchucktchi, the Kamtchatdale, Corean, Aino and Japanese, concerning which Dr. Latham says: "they have a general glossarial connection with each other; the grammatical structure of only one of them, the Japanese, being known." He also adds: "What applies to the language of the Peninsular tribes applies to their physical appearance also."

It being granted that the Iroquois, Dacotahs and Choctaws are Turanian, to which of the Turanian classes, Finnic, Turkic, Mongolic, Tungusic, Dravidian, or Peninsular, do they belong? Were they very ancient peoples like the Peruvians, grammar could not settle the question, owing to changes that have taken place in the systems of some Turanian languages. These changes principally affect the pronoun. Thus Dr. Edkins points out the fact that in the Mongol class alone the Buriat renders "I kill" by *alana-p*, while with the Eastern Mongol it is *bi-alana*; the pronoun being in the one case terminal, in the other a prefix. Dr. Edkins regards the latter as the older form, but, apart from the analogous case presented in a comparison of the Latin with its modern representatives, the occurrence of the *alana-p* form in the ancient dialects of Peru seems to give it the prior claim to antiquity. Now the Iroquois, Dacotah and Choctaw systems prefix the personal pronouns. In the Finnic, Turkic and Dravidian Turanian classes the pronoun is terminal, as in the Quichua of Peru. In some of the Mongol dialects, in the Tungusic and Peninsular classes, the pronoun occupies the same initial position as in the North American languages of Turanian origin. But Dr. Latham says "in his most typical form the American Indian is not Mongol in physiognomy"; and certainly none of the tribes we are now considering have anything in common with the Tungus, apart from a common grammatical system. Once more I quote Dr. Latham: "In the opinion of the present writer, the Peninsular languages agree in the general fact of being more closely akin to those of America than any other." Many writers on the Tchukchi-Koriaks of the Peninsular area have compared them with American tribes, such as Von Matiuschkin, who says: "They are distinguished from the other Asiatic races by their nature and physiognomy, which appears to me to resemble

that of the Americans." Mr. Baldwin, in his *Ancient America*, asserts that "Our wild Indians have more resemblance to the nomadic Koraks and Chookchees found in Eastern Siberia, throughout the region that extends to Behring's Strait, than to any people on this continent. Those who have seen these Siberians, travelled with them, and lived in their tents, have found the resemblance very striking; but I infer from what they say that the Korak or Chookchee is superior to the Indian." Mr. J. Mackintosh, whose book on "*The Discovery of America and the Origin of the Indians*," was published at Toronto in 1836, exhibited many interesting parallels between the American Indians and the Koriaks, but as he considered the former as one people and united the latter with the Tungus, his parallels are practically useless. So common is the statement that the languages of the Tchucktchis and Esquimaux are virtually one, that in my article on the affiliation of the Algonquin languages I was misled by the universal consensus into a homologation of it; but the exploring expeditions undertaken by the United States government have proved that the statement is unfounded, and that the Tchucktchis of Asia differ from the Esquimaux physically as well, being taller and thinner, with redder complexions and more prominent features, in every respect a superior body of men. The error arose in confounding the Aleutans and Kadiaks with the Esquimaux or Inuit, for the identity in language of these peoples with the Tchucktchis is beyond doubt.

While the Iroquois traditions, according to Dr. Oronhyatekha, assert the autochthonic origin of that people, those of the Dacotahs and Choctaws, as related by Catlin and others, refer to a migration from the north-west, where they dwelt for a time amid snow and ice. It is evident that the original home of Dacotahs and Choctaws was that also of the Wyandot-Iroquois, and that the autochthonic theory is of a piece with the same doctrine among the ancient Greeks, a mere form of national vanity. Iroquois, Dacotah and Choctaw grammar agrees in all points, even to the proposed pronouns, with that of the Peninsular languages. The tall muscular form, red complexion and prominent features of the Tchucktchis agree with the physical appearance of the three American families. The encroaching, warlike, indomitable spirit of the Koriaks, of whom the Tchucktchis are a branch, can find no better parallel than among the three warrior peoples of North America. Some of the Koriak tribes flatten

the head; so did the Choctaws, the Catawbas, and some of the Dacotahs. I know of no Mongolic or Tungusic peoples—the only others with whom grammatical forms permit us to compare the Iroquois, Dacotahs and Choctaws—who practised this artificial compression of the skull. All these facts tell powerfully in favour of a peninsular derivation. Add to this the fact that the three American families were sun worshippers, and that their religion thus agrees with that of the Koriaks, Ainos and Japanese; that Arioski, the Koriak war-god, corresponds to the Wyandot-Iroquois Areskoui, and the Japanese Jebisu, to the Choctaw or Muskogulge Eefeekesa, and the evidence becomes irresistible.

In one of the families under consideration, tribal names serve to confirm the connection with Peninsular peoples. This is the Cherokee-Choctaw. In the Cherokees we readily recognize the Koriaks, who call themselves Koraeki, and in the Choctaws it is not hard to find the Tshekto, as the so-called Tehuktchi are properly designated. Now the Koriak-Tehuktchis and the Choctaws agreed in flattening the head, as we have already seen. They also agree in being great lovers of manly sports, and I cannot but think that “the game resembling prisoners bars” with which Martin Sauer in his account of the Tehuktchi connects “their dexterity in throwing stones from a sling,” is the well known “ball play” or “lacrosse,” in which the Choctaws specially excel, but which is also common to the Iroquois and Dacotahs. A game closely resembling lacrosse is played in Japan.

There are many Koriak-Tehuktchi words in Choctaw and Cherokee, such as the Tehuktchi *ishtamat* 4, *tahlimat* 5, *awinjak* 6, *kolle* 10, in which we recognize the Choctaw *ushta*, *tahlapi*, *hannali* and *pokoli*. Others are *annakh* father, the Choctaw *unkey*; *ikahlik* fish, the Choctaw *kullo* and Cherokee *agaula*; *ijuk* foot, the Choctaw *iyi*; *nujak* hair, the Choctaw *nutakhish*; *unnjuk* night, the Muskogulge *nennak*; *kiuk* and *wegim* river, the Choctaw *hucha*, *okhina*; *matschak* sun, the Chickasaw *neetakhassch*; *utut* tree, the Muskogulge *ittah*; *aganak* woman, the Cherokee *ageyung*; *imagh* sea, the Cherokee *amaquaohe*; *unako* tomorrow, the Choctaw *onahe*, &c. But so far as I am able to judge from the materials at my disposal, the Cherokee-Choctaw vocabulary has greater affinity to the Japanese and Loo Choo than to the Koriak-Tehuktchi. Thus, in Japanese the words denoting bone and boat or canoe are nearly



identical, the former being *fone*, the latter *fune*. Now in the Choctaw, strange to say, *foni* is bone and *peni* boat. The day is *nitchi* in Loo Choo and the sun is *nitji* in Japanese, and these correspond to the Choctaw *neetak* and the Muskogulge *neetahusa*. Man is *hito*, *otoko* in Japanese, and *hatak* in Choctaw; while woman is *tackki* in Loo Choo and *tekchi* in Choctaw. The Choctaw *eebuk* and the Chickasaw *skoboch* head, find their equivalents in the Loo Choo *besi* and the Japanese *kubi*. So, house is *chookka* in Choctaw and *chukutsche* in Japanese; rain being *ema* in the former and *ame* in the latter. These instances will suffice to indicate, what I have more fully set forth in the Canadian Journal, the radical unity of the Cherokee-Choctaw and Peninsular vocabularies. What better proof of a common origin could be demanded than that which is presented in a comparison of the Japanese *otoko-no-fone*, "the man's bone," with the Choctaw *hatak-in-foni*; or of the Loo Choo *takki-noo-eebee*, "the woman's finger," with the Choctaw *tekchi-in-ibbak*? The Japanese past tense in *ta* and the Loo Choo in *tee*, which find their equivalent in the Choctaw *tok*, illustrate the final check that marks the *ibbak* of the latter as compared with the *eebee* of the former, and refer the philologist to the allied Koriak Tchuktchi which abounds in such terminations. While it is true that the Koriaks have been frequently regarded as the parent stock of American tribes in general, I am not aware that any writer has ever specifically placed them in relations with the Cherokee-Choctaw confederacy. To find Koriaks in Alaska has been deemed a reasonable enough thing, but snow in harvest would have been thought as likely a phenomenon as Tchuktchis in Tennessee. Thus we find Chateaubriand gravely asserting that the Chickasaws, a Choctaw tribe, came from Peru at the time that the Natchez immigrated from Mexico. Tennessee and Mississippi are the elephant of the Chickasaws and Natchez, Peru and Mexico their tortoise, but we ask in vain on what does the tortoise stand, for of all American populations the Mexican is the hardest to affiliate. I willingly admit that the Chickasaws, with all the other members of the Cherokee-Choctaw confederacy, belong to the same parent stock as the sun-worshipping Peruvians, but, inasmuch as this parent stock is found in the north-west, evidence of no common character would be required to render probable a retrograde movement from South to North America. To sum up the

argument for the Peninsular Asiatic origin of the Cherokee-Choctaw family, we have found it to be proved by language in its grammatical and verbal forms, by tribal designations, physical features, moral character, religion, and at least one peculiar custom.

For the Wyandot-Iroquois family I have so far found no tribal designations in the Peninsular area that correspond, but the identity of the two war-gods Arioski and Areskoui undoubtedly links them with the Koriaks proper. This is confirmed by the many resemblances that are found to exist between the Cherokee (Koraeki) and Iroquois vocabularies, some of which are indicated in the Mithridates. Such are the Cherokee *gahnnee* and the Cayuga *kanoh*, arrow; *oostekuh*, child, and the Tuscarora *yetyatshoyuh*; *choosa*, die, death, and the Mohawk *keah-heyoh*; *keira*, *keethlah*, dog, and the Onondaga *tschierha* and Tuscarora *cheeth*; *cheela*, *cheera*, fire, and the Caughnawaga *ojeehlah* and Tuscarora *ot-cheere*; *atseeai*, man, and the Minekussar *itaatsin*, and Mohawk *ratsin*; *narne*, mountain, and the Wyandot *onontah*; *yahnogah*, tongue, and the Iroquois *honacha*; *ageyung*, woman, and the Tuscarora *ekening*. The relations of Iroquois and Peninsular words are numerous and close. The following is not a selection but a chance collation of them:

## WYANDOT-IROQUOIS.

arm.....onentcha *Iroquois*.  
 axe.....askwechia “  
 bad.....washuh *Tuscarora*.  
                   hetken *Iroquois*.  
 boat, canoe..gahonhwa “  
 boy, son....yung *Oneida*.  
 brother....jattatege *Onandaga*.  
 child.....kotonia *Iroquois*.  
 earth.....ohetta “  
 eat.....hiquekeh “  
 egg.....onhonchia “  
 father.....ata *Tuscarora*.  
                   hanec *Seneca*.  
                   lahkeni *Oneida*.  
 fire.....yoneks *Tuscarora*.  
 fish.....keyunk *Mohawk*.  
 foot.....auchsee *Tuscarora*.  
                   achita *Wyandot*.  
 come.....karo *Mohawk*.  
 go.....higue *Iroquois*.  
 hair.....ahwerochia “  
 hand.....chotta “  
                   osnonsa “

## PENINSULAR.

oondee *Insu*.  
 kvasqua *Kamchatka*.  
 wasa *Loo Choo*.  
 khatkin *Koriak*.  
 cahani *Aino*, huni *Loo Choo*.  
 iegnika *Tchuktechi*.  
 ototo *Japanese*.  
 kodoma “  
 ttati *Corea*, tjidsi *Japanese*.  
 cwa *Japanese*.  
 ngach *Kamchatka*.  
 atta *Tchuktechi*, teti *Japanese*.  
 annakh *Tchuktechi*.  
 illiguin “  
 annak “  
 sakkana *Japanese*.  
 assi “  
 gitkat *Tchuktechi*.  
 kuru *Japanese*.  
 yuki “  
 kurrazzee *Loo Choo*.  
 settoo *Kamchatka*.  
 soan *Corea*.

## WYANDOT-IROQUOIS.

heart.....	hahweriacha	<i>Iroquois.</i>
heaven, sky.	toendi	<i>Wyandot.</i>
	kiunyage,	<i>Seneca.</i>
man.....	eniha	<i>Nottoway.</i>
moon.....	kanaughquaw	<i>Cayuga.</i>
	kelanquaw	<i>Mohawk.</i>
mother.....	anah	<i>Tuscarora.</i>
mouth.....	agwaghse	<i>Mohawk.</i>
nose.....	yuungah	<i>Wyandot.</i>
river.....	joke	<i>Nottoway.</i>
small.....	ostonha	<i>Iroquois.</i>
snow.....	ouniyeghte	<i>Mohawk.</i>
sun.....	hiday	<i>Tuscarora.</i>
	onteka	<i>Iroquois.</i>
tongue.....	ennasa	"
water.....	hohnega	"
white.....	kearagea	"
woman.....	yonkwe	"
	otakai	<i>Wyandot.</i>
	ekening	<i>Tuscarora.</i>
sister.....	akzia	<i>Onondaga.</i>
finger.....	eniage	"
basket.....	atere	<i>Iroquois.</i>
tail.....	otahsa	"
kill.....	kerios	"
write.....	khiatons	"
copper.....	kanadzia	"
nail (finger).	ohetta	"

## PENINSULAR.

kokurro	<i>Japanese.</i>
ting	"
khigan	<i>Koriak.</i>
aino	<i>Aino.</i>
kounetsou	<i>Aino.</i>
geilgen	<i>Koriak.</i>
anak	<i>Tchuktchi.</i>
ekigin	"
chynga	<i>Tchuktchi, honna Loo Choo</i>
kiuk	<i>Tchuktchi.</i>
uicinan	<i>Kamtchatka.</i>
anighu	<i>Tchuktchi.</i>
tida	<i>Loo Choo.</i>
nitji	<i>Japanese.</i>
nutshel	<i>Kamtchatka.</i>
mok, nouna	<i>Tchuktchi.</i>
sheeroosa	<i>Loo Choo.</i>
innago	"
tackki	"
aganak	<i>Tchuktchi.</i>
zia	<i>Aino.</i>
ainhanka	<i>Tchuktchi.</i>
teeroo	<i>Loo Choo.</i>
dzoo	"
korossu	<i>Japanese.</i>
katchoong	<i>Loo Choo.</i>
kanujuk	<i>Tchuktchi, sintju Japan-</i>
kouda	<i>Kamtchatka. [ese.</i>

Such are a few of the resemblances which lie on the surface, in connection with which, and this will equally apply to the Cherokee-Choctaw languages, it may be said that the Iroquois dialects are more closely related through their vocabularies to the Peninsular tongues than are the English and the German to one another. Like the Cherokee-Choctaw family, the Iroquois have also been found to agree with the Asiatic peoples in their grammatical forms, physical features, and religion. The sun or chief divinity, *matschak* in *Tchuktchi*, *nitji* in *Japanese*, and *neetakhassh* in *Choctaw*, has appeared as *onteka* in *Iroquois*; and the *Catawba notech*, the *Adahi nestach*, the *Cuchan nyatch*, the *Peruvian inti*, and the *Araucanian antu*, *antaigh*, carry on the sun-worshippers of north-eastern Asia far into the southern continent. The warlike, intrusive *Koriak*, who has driven his relative the *Kamtchatdale* to the south of his peninsula, and almost exterminated the *Yukagir*, is, apart from all other considerations, the fittest Asiatic with whom to compare the similarly warlike and intrusive *Iroquois*.

The third family of North American Turanians, but really

the first of the three in geographical order, and therefore probably the last in chronological, is the Dacotah. Some of its tribes contain the finest specimens of native humanity on the continent, and some have exhibited a degree of culture much in advance of other northern aborigines. They are essentially landmen like the Iroquois and Choctaws, and, like them, never dreamed of an insular heaven. The past few years have shewn that even now they retain their old indomitable spirit, for they are to the United States what the Koriaks are to Russia. They have their traditions of a deluge, like the Iroquois, Choctaws, Cherokees and Caddos, traditions that do not appear in the Algonquin and Malay-Polynesian areas, but which flourish in Kamtchatka and other Peninsular regions. They are in fact unadulterated Turanians. Nor can they have long been occupants of American soil, for their language bears traces too clearly defined of a Peninsular origin to have stood the wear and tear of many centuries. Lieut. Clifford, R.N., in his short preface to the Loo Choo vocabulary in Basil Hall's voyages, calls attention to the fact that the infinitive or simple form of the verb in that language ends in *ng* preceded by a vowel, as in *coyoong* bite, *ooyoong* break, *nintoong* die, *simmatong* dwell, *katcheeming* shake, *irreechang* bake, &c. This is precisely what we find in the Dacotah proper or Sioux, as in *opetong* buy, *dowang* sing, *manong* steal, *nahong* hear, *echong* make, *asniyang* heal, &c. But in Kamtchatdale the simple form of the verb ends in *tsh*, a totally different form. Thus *kwatshquikotsh* is to see, *koogatsch* to cry, *kassoogatsh* to laugh, *ktsheemgutsh* to sing, *kanhilkitsch* to lie down, *kowisitch* to go, *koquasitch* to come, &c. But here again, in spite of the apparent diversity of the form from that of the Dacotah, evidence of relationship is manifest, for the Assiniboin, a Dacotah dialect, exhibits the Kamtchatdale form. Examples are *wunnaeatch* go, *eistimmatch* sleep, *aatch* speak, *wauktaitch* kill, *waumnahgatch* see, *aingatch* sit, *mahnritch* walk, &c. This double identity in the form of a part of speech establishes a closer connection than that which is afforded by a common syntax, and links the Dacotahs unmistakeably with the stock to which the people of Loo Choo and the Kamtchatdales belong. Nor is the vocabulary wanting in confirmation of such a connection, as may be seen from the following brief comparison :

## DACOTAH.

arm.....ada *Hidatsa*.  
 shoulder...hiyete *Dacotah*.  
 bad.....shicha “  
 bone.....hidu *Hidatsa*.  
 boat.....wata *Dacotah*.  
 boy, son.....eeneek *Winnebago*.  
 blood.....idi *Hidatsa*.  
 bull, buffalo.bisha *Upsaroka*.  
 child.. ....wahcheesh *Dacotah*.  
 cold.....sinnee “  
 ice.....eagha “  
 day.....cang “  
 dog.....shong *Assiniboin*.  
 ear.....akuhi *Hidatsa*.  
 father .....ate *Dacotah*.  
 fire.....pytshi *Winnebago*.  
 fish.....ho *Dacotah*, poh *Mandan*.  
 foot.....siha *Dacotah*, itsi *Minetaree*.  
 good.....shusu *Mandan*, uohta *Dacotah*.  
 hair .....pahhee “ nijiah *Quappa*.  
 head.....pabhih *Quappa*, nahsso *Winne-*  
 heart .....cangte *Dacotah*. [bago.  
 hot.....dsashosh *Mandan*.  
 man.....wica *Dacotah*.  
               oeteka “  
 moon.....minnatatche *Upsaroka*.  
 mother.....enah *Dacotah*.  
 mouth.....iipthappah *Minetaree*.  
 neck.....apeeh “  
 night.....hangyetu *Dacotah*.  
 small.....ecat *Upsaroka*.  
 star.....peekahhai *Otto*.  
 sun ..... wee *Dacotah*.  
 water.....midi *Hidatsa*.  
               ninah *Winnebago*.  
 wife, woman..enauh *Osage*, wingy *Dacotah*.  
               tawieu *Dacotah*.  
               wakka-angka *Dacotah*.  
 lake .....tehha *Winnebago*.  
 leaf.....ape *Dacotah*.  
 grass.....pezi “  
 sick.....yazang “  
 white.....ataki *Hidatsa*.  
 make.....echong *Dacotah*.  
 write.....akakashi *Hidatsa*.  
 die, death .tehe *Hidatsa*, tha *Dacotah*.  
 2.....dopa *Hidatsa*.  
 3.....none *Otto*.  
 5.....kihu *Hidatsa*.  
 6.....thata *Ioway*.  
 7.....shagoa *Assiniboin*.  
 8.....dopapi *Hidatsa*.

## PENINSULAR.

ude *Japanese*.  
 kada “  
 kuso “  
 cutsi *Loo Choo*.  
 agwat *Korak*.  
 iegnika *Tchuktehi*.  
 tji *Japanese*.  
 woushe *Loo Choo*.  
 vassasso *Insu*.  
 anu *Tchuktehi*.  
 eigu *Koriak*.  
 gaunak *Tchuktehi*.  
 ing *Loo Choo*.  
 qui *Corea*.  
 atta *Tchuktehi*.  
 pangitsh *Kamtchatka*.  
 eo *Loo Choo*, iwo *Japanese*.  
 assi, atsehi *Japanese*.  
 jukka *Japanese*, hota *Corea*.  
 bode *Corea*, nujak *Tchuktehi*.  
 bosi *Loo Choo*, naskok “  
 sing *Japanese*.  
 attisa *Loo Choo*.  
 uika *Tchuktehi*.  
 otoko *Japanese*.  
 mangets “  
 anak *Tchuktehi*.  
 jeep *Corea*.  
 kubi *Loo Choo*.  
 unnjuk *Tchuktehi*.  
 ekitachtu “  
 fosi *Japanese*.  
 fi “  
 meze *Loo Choo*.  
 nouna *Tchuktehi*.  
 innago *Loo Choo*.  
 takki “  
 aganak *Tchuktehi*.  
 touga “  
 ba *Japanese*.  
 phee *Corea*.  
 yadong *Loo Choo*.  
 attagho *Kamtchatka*.  
 ootchoong *Loo Choo*.  
 kaku *Japanese*.  
 tokok *Tchuktehi*.  
 dupk *Aino*.  
 nee *Loo Choo*.  
 goo “  
 ittitse *Japanese*.  
 siz “  
 duhpyhs *Aino*.

In the above, as well as in other verbal comparisons made in these papers, it must be remembered that the scanty materials in my possession prevent anything like a full representation of

the agreement between the languages compared. This is especially the case with the Assiniboin and Kamtchatdale, which have been found to agree so remarkably in the simple form of the verb. Sufficient evidence, however, has been afforded of the Peninsular origin of the Dacotahs.

The question naturally occurs, "At what point did the Turanian Americans first appear upon the continent?" That point can be no other than the termination of the Aleutan chain, which extends from the coast of Kamtchatka to the peninsula of Alaska or even to Cook's Inlet. There we find at least four different Indian families. One of them is the Esquimaux or Innuït, whose dialects do indeed contain many Peninsular (Tchuktchi, &c.) words, but whose affinities are greater with the Greenlanders on the one hand and the Asiatic Samoyeds on the other, the very word Innuït being the Samoyed *ennete*, man. Next come the Thlinkeets or Koljush, a people in some respects superior to the Esquimaux, in whose language the termination in *l* and *tl*, so characteristic of the Nahuatl or Mexican, first makes its appearance. These I would incline to associate with the Yukahiri of Siberia, and with the mask-using tribes of the Aleutan chain. Following the Thlinkeets appears a vast family of tribes extending from the Yukon to Mexico and from Cook's Inlet to the Algonquin Cree region about Hudson's Bay. These are the Tinneh Indians, whose name, derived from the word denoting man, language, physical appearance, character, dress and appliances, religion, manners and customs, connect them with the Siberian Tungus. And, lastly, we find in the north-western part of this same area a number of tribes known as American Tchuktchis, Tchugaz, Aliaskas, &c., who have generally been regarded as part of the Esquimaux stock, from which, however, they are well differentiated. These American Tchuktchis or Tchugaz possess a language identical with that of their Asiatic namesakes and constitute one family with them, the connecting links being found in the Aleutans proper, the Unalashkans and the Kadiak tribes. A sketch of Aleutan grammar furnished by Governor Furnhelm, is contained in the first volume of Contributions to American Ethnology, but as it is so vague as to supply absolutely no information in regard to cardinal points of syntax, the vocabulary must be our test of relationship between the Aleutan and Peninsular languages. In numerals the Asiatic Tchuktchis agree with the Kadiak and Tchugaz of America.



TCHUKTCHI	AMERICAN.
1. ataschek.....	attutschik <i>Kadiak</i> , <i>Tchugaz</i> . atakan <i>Aleutan</i> , atokeu <i>Unalashkan</i> .
2. malgok.....	mallok, ulcha <i>Kadiak</i> , atleha <i>Tchugaz</i> , allak <i>Aleutan</i> , arlok <i>Unalashkan</i> .
3. pingaju.....	pingaiun <i>Kadiak</i> , pingaijua <i>Tchugaz</i> , kankus <i>Aleutan</i> , kankoo <i>Unalashkan</i> .
4. ischtamat.....	schtamu <i>Kadiak</i> , tschitaami <i>Tchugaz</i> , setschen <i>Aleutan</i> , seecheen <i>Unalashkan</i> .
5. tatlimat.....	tadlimu <i>Kadiak</i> , talliimi <i>Tchugaz</i> , tschan <i>Aleutan</i> , chaan <i>Unalashkan</i> .
6. awinljak.....	agvinlign <i>Kadiak</i> , achoinlign <i>Tchugaz</i> , atun <i>Aleutan</i> , atoon <i>Unalashkan</i> .
7. malguk.....	malchungin <i>Kadiak</i> , malchomin <i>Tchugaz</i> , olung <i>Aleutan</i> , ooloon <i>Unalashkan</i> .
8. pigajunga.....	ingeljulin <i>Kadiak</i> , <i>Tchugaz</i> , kaltschin, kamtshing <i>Aleutan</i> , kancheen <i>Unalashkan</i> .
9. agbinlik.....	koljungoan <i>Kadiak</i> , <i>Tchugaz</i> . schyset <i>Aleutan</i> , seecheen <i>Unalashkan</i> .
10. kulle.....	kollin <i>Kadiak</i> , koln <i>Tchugaz</i> , hasuk <i>Aleutan</i> .

The ordinary vocabulary exhibits the near relationship of the transitional Aleutans and their American cousins with the Peninsular family.

PENINSULAR.	ALEUTAN, ETC.
arm....ude <i>Japan</i> , setto <i>Kamtchatka</i> .	tsha <i>Aleutan</i> , aiigit <i>Kadiak</i> .
arrow.....eea <i>Loo Choo</i> .	kio <i>Aliaska</i> .
belly.....ksoch <i>Kamtchatka</i> .	aksyek <i>Kadiak</i> .
blood.....auka, aukwe <i>Tchuktehi</i> . messou <i>Kamtchatka</i> .	auk <i>Kadiak</i> , aiku <i>Tchugaz</i> . amgyk <i>Aleutan</i> .
boy, son...paca, pahatsh “ iegnika <i>Tchuktehi</i> .	abagutaga, awakutta <i>Kadiak</i> . anehtok <i>Aleutan</i> , tanoghak “
black.....tanjachtu “	tannechtuk <i>Kadiak</i> , tannacktok <i>Tchugaz</i> .
brother....kiodai <i>Japan</i> . ani “	choyotha <i>Aleutan</i> , ooyitaga angaga <i>Kadiak</i> . [Kadiak.
copper.....kanujak <i>Tchuktehi</i> .	kanujak <i>Aleutan</i> , <i>Kadiak</i> , kannah
cold.....kanjukakok “	kinakak <i>Aleutan</i> . [Tchugaz.
ice.....cigu <i>Koriak</i> , tshikuta <i>Tchuktehi</i> .	caguk <i>Tchugaz</i> , tsiku <i>Kadiak</i> .
death.....tokok <i>Tchuktehi</i> .	tokok “ tokook “
day.....gaunak, aghynak <i>Tchuktehi</i> .	achanak “ chanak “
dog.....kossa <i>Kamtchatka</i> .	uikuk <i>Aleutan</i> , aikok “
earth.....nana <i>Tchuktehi</i> . nutenut <i>Koriak</i> . tjidsi <i>Japan</i> .	nuna <i>Tchugaz</i> , <i>Kadiak</i> . tannak <i>Aleutan</i> , tannok <i>Unalash-</i> tshekak <i>Aleutan</i> . [ka.
eat.....kamoong <i>Loo Choo</i> .	kaangen “
eye.....lilengi <i>Koriak</i> .	ingelak <i>Kadiak</i> .
egg.....manni <i>Tchuktehi</i> .	mannek “
father.....atta, attaka “	ataga <i>Kadiak</i> , ataaka <i>Tchugaz</i> . athan <i>Aleutan</i> , adan <i>Unalashkan</i> .
fire.....eknok <i>Tchuktehi</i> , finoko, <i>Japan</i> .	kignak “ knok <i>Kadiak</i> .
fish.....ikahlik <i>Tchuktehi</i> .	ikalljuk <i>Kadiak</i> .
foot.....ijuk <i>Tchuktehi</i> , atschi <i>Japan</i> . gitkat “	iuch, idchuk “
give.....tunni “	kita <i>Aleutan</i> .
ozagadi <i>Loo Choo</i> .	tunniu <i>Kadiak</i> , tuneechoo <i>Tchugaz</i> .
good.....matschinka <i>Tchuktehi</i> .	agada <i>Aleutan</i> , akatscha <i>Unalash-</i> matschiskuk <i>Aleutan</i> . [ka.

## PENINSULAR.

girl, daughter.	pannika	<i>Tchuktchi.</i>
hair.....	nujet	"
beard.....	ugnit	"
head.....	naskok	"
life.....	inotji,	<i>Japan.</i>
man.....	otoko	"
	uika	<i>Tchuktchi</i> , ickkega <i>Loo Choo.</i>
moon.....	tsuki	<i>Japan.</i>
	tankuk	<i>Tchuktchi.</i>
mother.....	anak	"
night.....	unnjuk	"
no.....	poodong	<i>Corea.</i>
nose.....	chyinga	<i>Tchuktchi</i> , kaankaang <i>Kamtchatka.</i>
woman.....	innago	<i>Loo Choo.</i>
	aganak	<i>Tchuktchi.</i>
	nulliak	"

## ALEUTAN, ETC.

punniaka	<i>Kadiak.</i>
noget	" nuett <i>Tchugaz.</i>
ugnit	" ungit "
naskok	" <i>Tchugaz.</i>
anghogikoo	<i>Aleutan.</i>
toioch	"
ugig	<i>Aleutan</i> , uika <i>Kadiak</i> , &c.
tugidak	<i>Aleutan.</i>
tangeik	<i>Tchugaz.</i>
anak	<i>Aleut. annaga Kadiak, Tchugaz</i>
amgik	" unuk " "
pedok	<i>Kadiak.</i>
anghosin	<i>Aleutan</i> , knak <i>Kadiak.</i>
angagenak	<i>Aleutan.</i>
aganak	<i>Kadiak.</i>
nuleka	"

Such examples may be multiplied indefinitely. From those that have been given it appears that the Aleutan and Unalashkan, while differing in some respects from the Kadiak and Tchugaz, still exhibit ample evidence of a common derivation with them from the Peninsular family. Many of the words in all of these languages are found in the Innuít or Esquimaux dialects, but in spite of this it may be said that there is between the Aleutan-Kadiak and the Esquimaux a radical difference in vocabulary. Still they have largely influenced each other, and traces of this influence are not wanting in the Dacotah and other southern languages of Turanian origin. Thus the Dacotah *tipi*, Yankton *teepee*, Assiniboin *teib*, house or tent, is undoubtedly the Esquimaux *topek*, *tupek*, and many like examples of Innuít influence might be afforded.

The relations of the Transitional Turanians, as we may term the Aleutans, Kadiaks or Kaniagmites, &c., with the Dacotahs, admit of ample illustration from the vocabulary.

## TRANSITIONAL.

bad.....	kabigwaskak	<i>Kadiak.</i>
boy, son.....	awakutta	"
	anekthok	<i>Aleutan.</i>
cold.....	tshikok	<i>Tchugaz.</i>
	kinakak	<i>Aleutan.</i>
	potsnatok	<i>Kadiak.</i>
day.....	chanak	"
	hunnukhpak	" (to-day)
dog.....	piuchta	<i>Tchugaz.</i>
eat.....	pittoaga	<i>Kadiak.</i>
eye.....	thack	<i>Aleutan.</i>
father.....	ataka	<i>Kadiak.</i>
	athan	<i>Aleutan.</i>
foot.....	itiat	<i>Kadiak.</i>

## DACOTAH.

kubbeek	<i>Upsaroka.</i>
skakatte	"
eeneek	<i>Winnebago</i> , &c.
tasaka	<i>Dacotah.</i>
shineehush	<i>Mandan.</i>
oisnaitch	<i>Assiniboin.</i>
cang	<i>Dacotah.</i>
aungpa	<i>Yankton</i> , anipa <i>Dacotah.</i>
biska	<i>Upsaroka.</i>
wota	<i>Dacotah</i> , wautah <i>Assiniboin.</i>
eshlike	<i>Dacotah.</i>
ate	"
tantai	<i>Minetaree.</i>
itsi	"

## TRANSITIONAL.

good .....	assiktok	<i>Kadiak.</i>
great .....	taangoellik	<i>Aleutan.</i>
	angoch	<i>Kadiak.</i>
hand .....	shuwanka	"
head .....	naskok	"
heart .....	kanogh	<i>Aleutan.</i>
husband .....	oogeen	"
knife .....	mina	<i>Alaska.</i>
man .....	uika	<i>Kadiak, ugig Aleutan.</i>
	toioch	<i>Aleutan.</i>
mother .....	annak	"
night .....	unuk	<i>Tchugaz.</i>
nose .....	padzsheeguak	<i>Kadiak (nostril)</i>
rain .....	kedak	"
tree .....	kunnakat	"
wood .....	opohak	"
woman .....	angagenak	<i>Aleutan.</i>
name .....	assia	<i>Aleutan, atcha Kadiak.</i>
die, death .....	tokok	<i>Tchugaz.</i>
see .....	tangha	<i>Kadiak.</i>

## DACOTAH.

itsicka	<i>Upsaroka.</i>
tangka	<i>Dacotah.</i>
honska	"
onka	<i>Mandan.</i>
nahsso	<i>Winnebago, naso Otto, &amp;c.</i>
cangte	<i>Dacotah.</i>
eekunah	<i>Winnebago.</i>
meena	<i>Yankton.</i>
wica	<i>Dacotah</i>
oeeteka	"
enah	"
hangyetu	"
pute, pasu	<i>Dacotah, peso Otto.</i>
hade	<i>Hidatsa.</i>
cang	<i>Dacotah.</i>
pazu	"
wingyan	"
caze	<i>Dacotah, dazi Hidatsa.</i>
tehe	<i>Hidatsa.</i>
tongwang	<i>Dacotah.</i>

Similar relations appear in the Wyandot-Iroquois.

## TRANSITIONAL.

boat .....	kaiyakh	<i>Kadiak.</i>
mother .....	choyotha	<i>Aleutan.</i>
	ooyitaga	<i>Kadiak.</i>
copper .....	kanooyat	"
come .....	taieechook	"
day .....	ukhno	"
drink .....	taangatha	<i>Aleutan.</i>
fire .....	kunok	<i>Tchugaz.</i>
foot .....	kita	<i>Aleutan.</i>
give .....	akatsha	<i>Unalaska.</i>
go .....	itsha	<i>Aleutan.</i>
	achook	<i>Kadiak.</i>
hand .....	shuwanka, aiigit	<i>Kadiak.</i>
head .....	angloon	"
leg .....	irruhka	"
life .....	anghogikoo	<i>Aleutan.</i>
moon .....	eghaloak	<i>Kadiak.</i>
nose .....	anghosin	<i>Aleutan.</i>
river .....	kuik	<i>Tchugaz.</i>
snow .....	kanneek	<i>Aleutan.</i>
speuk .....	yukhten	<i>Kadiak.</i>
star .....	sthak	<i>Aleutan.</i>
tongue .....	aghnak	"
tooth .....	choodit, hutuka	<i>Kadiak.</i>
	noontinga	<i>Tchugaz.</i>
water .....	nunak	"
	taangak	<i>Aleutan.</i>
wind .....	kaiyaik	<i>Kadiak.</i>
woman .....	aiyagar	<i>Aleutan.</i>
	angagenak	"
	aganak	<i>Kadiak.</i>
god .....	aghugueh	<i>Aleutan.</i>
salt .....	attagook	<i>Kadiak.</i>

## WYANDOT-IROQUOIS.

gya	<i>Huron.</i>
caukotka	<i>Tuscarora.</i>
jattatege	<i>Onondaga.</i>
kanadzia	<i>Iroquois.</i>
dague	<i>Iroquois.</i>
egnisera	<i>Mohawk.</i>
uttanote	<i>Seneca.</i>
yoneks	<i>Tuscarora.</i>
achita	<i>Huron, sita Iroquois.</i>
wahetky	<i>Iroquois.</i>
yehateatyese	<i>Mohawk.</i>
higue	<i>Iroquois.</i>
sesnonke	<i>Mohawk, chotta Iroquois</i>
onoalagone	<i>Iroquois.</i>
orusay	<i>Tuscarora.</i>
yonhe	<i>Mohawk.</i>
kelanquaw	"
enuehsake	<i>Cayuga.</i>
kaihyochakouh	<i>Mohawk.</i>
ouniyeghte	"
haguetaa	<i>Iroquois.</i>
ojistok	<i>Mohawk.</i>
honacha	<i>Iroquois.</i>
otoatseh	<i>Tuscarora.</i>
onotchia	<i>Iroquois.</i>
ohneka	"
tsandoosteeck	<i>Huron.</i>
gao	<i>Iroquois.</i>
echro	"
onheghtye	<i>Mohawk.</i>
ekening	<i>Tuscarora.</i>
ocki	<i>Huron.</i>
hotchiketa	<i>Iroquois.</i>

The same are found in the Cherokee-Choctaw.

## TRANSITIONAL.

arm.....	ipik	<i>Kadiak.</i>
blood.....	auk	"
	amgyk	<i>Aleutan.</i>
boy, son....	abagutaga	<i>Kadiak.</i>
bird.....	cissu	<i>Aleutan.</i>
goose.....	llak	"
mother.....	angaga	<i>Kadiak.</i>
child.....	ooskulik	<i>Aleutan.</i>
dog.....	pewatit	<i>Kadiak.</i>
ear.....	tottusak	<i>Aleutan.</i>
fish.....	ikalljuk	<i>Kadiak.</i>
go.....	annowa	"
good.....	assiktok	<i>Tchugaz.</i>
head.....	ischigi	<i>Aleutan.</i>
man.....	tsioch	"
moon.....	tangeik	<i>Tchugaz.</i>
mountain....	ingajek	<i>Kadiak.</i>
night.....	unuk	"
river.....	kuik	"
sun.....	madzshak	"
tongue.....	aghuak	<i>Aleutan.</i>
	ooloo, uloka	<i>Kadiak.</i>
death, die..	aschalik	<i>Aleutan.</i>
tooth.....	noontinga	<i>Tchugaz.</i>
wood.....	opohak	<i>Kadiak.</i>
woman.....	aganak	"
shoes.....	ihlhuchik	"
to-morrow..	wunnaho	"
sea.....	immak	<i>Tchugaz.</i>

## CHEROKEE-CHOCTAW.

sakpa	<i>Muskogulge.</i>
issish	<i>Chickasaw.</i>
homma	<i>Choctaw.</i>
pooskoos	"
hushi	"
shilaklak	"
nocksish	"
ulla	"
ophe	"
istehuchtsko	<i>Muskogulge.</i>
kullo	<i>Choctaw, agaula Cherokee.</i>
angya	<i>Choctaw.</i>
seohstaqua	<i>Cherokee.</i>
ecau	<i>Muskogulge.</i>
atseeai	<i>Cherokee.</i>
teenonenoghe	"
nunichaha	<i>Choctaw.</i>
nennak	<i>Muskogulge.</i>
hucha	<i>Choctaw.</i>
neetakhasshe	<i>Chickasaw.</i>
yahnogah	<i>Cherokee.</i>
soolish	<i>Chickasaw.</i>
selle, illi	<i>Choctaw.</i>
noteeh	<i>Muskogulge.</i>
upi	<i>Choctaw.</i>
ageyung	<i>Cherokee.</i>
shulush	<i>Choctaw.</i>
onaha	"
amaquahe	<i>Cherokee.</i>

The Kadiak and Tchugaz numerals being almost identical with those of the Tchuktchi, exhibit intimate relations with those of the Choctaw. The Aleutans, Kaniagmites, Tchugaz, Unalashkans, &c., may therefore be regarded as the latest wave of the Peninsular tide of migration, which from a remote period has been pouring in no stinted flow into the American continent, from the time when the Fuegians of the Chileno family in the far south first left their Asiatic home till the present day.

Within the limits of this article I have space barely sufficient to give an outline of the argument which carries the Peninsular family far into South America. The sun-worshipping Natchez of Mississippi, and the Cuchan, Maricopa and Dieguno tribes of New Mexico, as well as the Catawbias, Woccoons, Adahis, Uches and Caddos, to whom I have already alluded, all belong to the line of Peninsular migration, and the extinct mound-builders, if extinct they be, as sun-worshippers must have been of the same parent stock. But for the present I must pass them by as ethnologically of less importance than the South American members

of the family. In New Granada we meet with the Muyscas of Bogota, a sun worshipping race whose solar hero, the god Pesca or Bochica, is the Muskogulge Eefeekeesa and the Japanese Jebisu or Zhizobogats. But their solar deity proper is Zuhe, the same as the Huron Iouskeha and the Aleutan Agugux. They also worship Toca, the Huron Atahocan, and, perhaps, the Kamtchatdale Hutka; as well as Aghajun, the Koriak Anggan. Their tradition of the deluge is well defined, and agrees with that of the Kamtchatdales, Dacotahs, Iroquois, Cherokees, Choctaws, Uches, Caddoes and Peruvians. The Muysca verb ends in *scua* or *suca*, and is thus not unlike the Kadiak in *ok* or *tok*. In the use of postpositions; the order of the verb, as 1st. pronoun, 2nd. verbal root, 3rd. temporal index; the preposition of the accusative to the verb and of the genitive to its governing noun: the Muysca completely accords with the Peninsular and allied North American languages. For the agreement of its vocabulary with those of the Peninsular, Dacotah, Iroquois, Choctaw and Peruvian languages, I must refer to the comparative tables in the Canadian Journal. More important than the Muysca are the dialects of Peru, the Quichua, Quitena, Aymara, Cayubaba, Sapibocono, Atacamena, &c., and they deserve more than a passing notice.

The Peruvians, one of the oldest and perhaps the most civilized of native American peoples, have long been known as *par excellence* the sun worshippers of America. The sun, Inti among the Quichuas or Incas, is the same god as the Japanese Nitji, the Loo-Choo Nitchi, the Iroquois Onteka, the Cherokee Anantoge, the Choctaw Neetak, the Catawba Noteeh, the Adahi Nestach, the Coco-Maricopa Nyatz, and the Araucanian Antu, Antaigh. This name seems to have been the peculiar property of the Turanian worshippers of the solar orb. Another Peruvian god, like Pesca or Bochica of the Muyscas the hero of a deluge, was Apachic or Pachacamac, and in him we recognize the Muskogulge Eefeekeesa and the Japanese Jebisu. Eruchi was the Sapibocono, and Huiracocha the Quichua war-god, and these again recall the Iroquois Areskoui and the Koriak Arioski. The Peruvian Chinchas practised the artificial compression of the skull like the Choctaws, Catawbas, Natchez and Koriaks. The Quichuas and other Peruvian tribes embalmed their dead like the Ainos. The umbrella was a mark of dignity in ancient Peru as in Japan. The astronomical system of the Incas was virtually that of the

Muyscas, concerning which Dr. Hawks, in his Narrative of Commodore Perry's Expedition to Japan, says, alluding to the Japanese system: "We cannot leave it without the remark that on a comparison of it with that of the Muisecas, an ancient, semi-civilized and now extinct race that once inhabited the plains of Bogota in New Granada, the resemblances were so striking that they produced on our mind a conviction that the astronomical systems of the two peoples were substantially the same." There can be no doubt that the ancient civilization of Peru was that of Japan, and that the connecting links between the two countries are to be found in the mysterious mounds that mark the line of Peninsular migration in America. In confirmation of this I may state that Mr. Donald of this Society has recently called my attention to the fact that similar mounds have lately been discovered in Japan. Physically, so far as we have the means of judging, there seems to have been little in common between the Peruvians and the North American Turanians, and the skull of the former has been shown by Dr. Daniel Wilson of Toronto and other craniologists to be almost without parallel for smallness of capacity, a peculiarity that links it in some degree with that of the Kentucky mound-builders. But language in such a case must be our main test of relationship. In regard to grammatical forms, we find that the Peruvian languages employ post-positions, and that they place the possessive before its governing noun and the accusative before the verb, thus agreeing with all the languages that have so far occupied our attention. The Quichua has been said to differ from other American tongues in the possession of a full declension of the noun, but the same may be found in the Japanese and all its related languages, if we regard the postposition as inseparable from its regimen. The Quichua case terminations are simply cohering postpositions. The Aymara genitive answers perfectly to that of the Loo Choo, as in "the man's head," which is *chacha-na-ppekei* in the former, and *ickeega-noo-bosi* in the latter. In the Peruvian dialects, however, the place of the pronoun is terminal instead of initial as in the Japanese, so that the Quichua verb, as the Rev. Richard Garnett has shewn, corresponds with the Dravidian and thus with the Finnic and Turkic in its order of verbal root, temporal index and pronominal suffix. The Peruvians, therefore, must have separated from the Peninsular stem when the verb in the Japanese and its allied languages was still in the Ural-Altaic



stage of development. The Peruvian vocabulary confirms the theory of a Peninsular origin.

## PERUVIAN.

all .....	kuna,	<i>Quichua</i> .
bread .....	caneco,	"
dark .....	tutayasca	"
brother .....	hauquey	"
child .....	huahua	"
clothes .....	acsu	<i>Atacama</i> .
die, death .....	huanhu	<i>Quichua</i> .
day .....	chine	<i>Sapibococono</i> .
ear .....	aike	<i>Atacama</i> .
earth .....	idatu	<i>Cayababa</i> .
dust .....	turo	<i>Quichua</i> .
eye .....	naira	<i>Aymara</i> .
	nahui	<i>Quichua</i> .
father .....	tayta	"
	itica	<i>Atacama</i> .
fire .....	nina	<i>Quichua</i> , &c.
fish .....	challua	"
	kanu	<i>Aymara</i> .
forehead .....	mati	<i>Quichua</i> , emata <i>Sapibococono</i> .
goat .....	paca	<i>Aymara</i> .
hair .....	naccuta	"
hand .....	tachlli	"
head .....	ppekei	"
heart .....	soncco	<i>Quichua</i> .
knife .....	calhua	"
man .....	kkari	" &c.
	kosa	"
	chacha	<i>Aymara</i> .
	hake	"
moon .....	quilla	<i>Quichua</i> .
mother .....	mamay	"
mouth .....	khaipe	<i>Atacama</i> .
nose .....	cenca	<i>Quichua</i> .
sun .....	inti	" &c.
water .....	unu	"
white .....	yurac	"
year .....	huata	"
honey .....	nuski	" &c.
learn .....	yachachi	"
sister .....	nana	"
raise .....	haka	<i>Aymara</i> .
month .....	quiz	<i>Quichua</i> .
strike .....	takay	"
copper .....	anta	"
sea .....	mamacocha	"
tiger .....	uturunca	"
shoes .....	usuta	"
breast .....	nunu	"
	huntux	<i>Atacama</i> .
flesh .....	aycha	<i>Quichua</i> .
yellow .....	carhua	"
leg .....	chanca	"
ice .....	casa	"
grass .....	cachu	"
lip .....	sirpi	"

## PENINSULAR.

igneæ,	<i>Loo Choo</i> .
gamga,	<i>Kamtchatka</i> .
dochsae,	"
wiki	<i>Loo Choo</i> , aki <i>Tchuktchi</i> .
qua	<i>Loo Choo</i> .
chouksa	<i>Corea</i> .
gang	<i>Loo Choo</i> , sinu <i>Japanese</i> .
gaunak	<i>Tchuktchi</i> .
qui	<i>Corea</i> .
ttati	"
duro	<i>Loo Choo</i> .
netra	<i>Japanese</i> .
ni	<i>Loo Choo</i> .
teti	<i>Japanese</i> .
attaka	<i>Tchuktchi</i> .
annak	"
ikahlik	"
sakkana	<i>Japanese</i> .
omote	"
fija	<i>Loo Choo</i> .
nujet	<i>Tchuktchi</i> .
tatlichka	"
bosi	<i>Loo Choo</i> .
sing	<i>Japanese</i> .
khul	<i>Corea</i> .
guru	<i>Kurile</i> .
quaskoo	<i>Kamtchatka</i> .
ickkeega	<i>Loo Choo</i> .
okkai	<i>Aino</i> .
geiligen	<i>Koriak</i> .
ummâ	<i>Loo Choo</i> .
jeep	<i>Corea</i> .
chynga	<i>Tchuktchi</i> .
nitji	<i>Japanese</i> .
nouna	<i>Tchuktchi</i> .
sheeroosa	<i>Loo Choo</i> .
hiout	<i>Tchuktchi</i> .
mits	<i>Japanese</i> .
kicku	"
ane	"
aghe	"
gwautsee	<i>Loo Choo</i> .
taksu	<i>Kamtchatka</i> .
sintju	<i>Japanese</i> .
mok, imagh	<i>Tchuktchi</i> .
tora	<i>Japanese</i> .
kwutsu	"
mune	<i>Loo Choo</i> .
ingatah	<i>Kamtchatka</i> .
shishi	<i>Loo Choo</i> .
cheeroo	"
shanna	"
cigu	<i>Koriak</i> .
coosa	<i>Loo Choo</i> .
seeba	"

In the vocabularies published in the Canadian Journal, to which I have had so often to refer, will be found, together with a fuller illustration of the agreements between the Peruvian and Peninsular languages, others as complete with the Transitional Aleutan, &c., the Dacotah, Iroquois, and Choctaw-Cherokee. They are all members of one family. Finally the Chileno languages, embracing the Araucanian of Chili, the Puelche of the Pampas, the Patagonian and Fuegian, have all their grammatical and verbal relations with the Peruvian, and thus connect with the Peninsular stock of Asia. These dialects, like the Peruvian, exhibit evidence of great antiquity, although mere geographical position cannot determine that they are spoken by earlier immigrants than the civilized Quichuas, across whose lines they may possibly have passed on their way to a more southern home. They also were worshippers of the sun, and their gods Ngen, Eutagen, Pillan, and Toquichen, are the last representatives of the Koriak Anggan, the Kamtchatdale Hutka and Billukai, and the Huron Atahocan, the latter appearing also in Peru as the Quichua Atahuanca. Their Toquis or Governors are the Tokoks or Chiefs of the Aleutans, terms recalling the Tagus or chief magistrate of the ancient Thessalian States. The Araucanians also are the Koriaks and Iroquois of South America, indomitable warriors, the memory of whose valour is embalmed in a Chilean epic poem, thus preserving the martial character of one branch of the Peninsular family, as the Peruvians did the civilization of another. The Kamtchatdale and the Fuegian may perhaps illustrate a third and degraded class of tribal characteristics. But on the whole the family is a noble one, worthy of a better fate than that which has overtaken all its American representatives, if we except the Cherokee-Choctaw confederacy, which has risen to higher things.

It may be asked whether the Peruvian dialects, seeing that their grammatical forms agree with those of the Ural-Altaic and Dravidian languages, should not be connected with these rather than with the Peninsular tongues. Now it is true that in the Peruvian and Iroquois numerals there are Finnic and Turkic forms, such as the Peruvian *pisca* and Iroquois *wish*, *wisk*, 5, which are the Turkish *bes*h and Yakut *bes*, as well as the Finnic *viisi*, the Esthonian *wiis*, and Tcheremissian *vis*. The Aymara *ppekei* head, also is the Turkish *bash* and Yakut *bas*, and the Finnic *poja* and Maggar *fej*, while the Iroquois presents in the two remarkable forms *iokennores*, rain and *kanadra*, bread, the

undoubted equivalents of the Turkish *yaghmur* and the Magyar *kunyer*. But in spite of these resemblances, which it cannot be denied do attest connection if not relationship, a careful comparison of the Peruvian and Iroquois vocabularies with those of the Ural-Altaic languages has convinced me that the connection is one which must be established through the Peninsular forms of speech, with which the American languages have relations vastly more intimate and numerous than with the Finnic or Turkic classes. The Iroquois again is in no respects a Tartar, nor is there any native Finnic or Turkish civilization with which that of the Peruvians may be compared. As for the Turanians of southern Asia, even in the valuable comparative tables of Hyde Clarke, but a distant resemblance to the Peruvian appears in their vocabularies, and we possess not a shred of evidence to show that they ever became a maritime people or occupied the line of Malay immigration to the coasts of America. Dacotahs, Iroquois, Choctaws, Muyscas, Peruvians, Chilenos, were not maritime peoples but essentially landmen, who, but for the stepping stones of the Aleutan chain, never would have found their way to this continent.

All the American tribes of Turanian origin came originally, therefore, from the north in successive waves, which gradually overflowed the northern continent and poured their tide into the south. They came in at least two different forms or types of national character; the civilized Japanese, represented by the Muyscas and Peruvians, and in a minor degree, if these were not the Peruvians in progress southward, by the mound-builders, the miners of Lake Superior, the potters and weavers of the Ohio valley, by the Dacotah Mandans and the Natchez; and the uncivilized warriors of Koriak blood, from whom a succession of Araucanians and Cherokee-Choctaws, Iroquois and Dacotahs, have descended. And to tell the story of migration and make it plain so that all the world may understand, and the baseless fabric of an autochthonic American race may melt before it, the process still goes on across the bridge that spans the northern ocean from Kamtchatka to Alaska, over which so many generations have passed to an American home. There Aleutans and Unalashkans, Kaniagmutes and American Tehuktehis link the populations of two continents, and, with the facts that prove the advent of the intrusive Malays, who, wedge-like, entering from the west, split into many fragments the once solid Turanian phalanx, answer the oft-repeated question—"Whence came American man?"

no. 17 With kind regards  
A

## J A B E Z.

“And Jabez was more honourable than his brethren : and his mother called his name Jabez, saying, Because I bare him with sorrow. And Jabez called on the God of Israel, saying, Oh that thou wouldest bless me indeed, and enlarge my coast, and that thine hand might be with me, and that thou wouldest keep me from evil, that it may not grieve me ! And God granted him that which he requested.”—1 Chronicles iv. 9-10.

THE age in which we live is pre-eminently one of historical discovery. No longer dependent upon the doubtful traditions of the Greek and Latin historians, we are brought face to face with the actual sources of their imperfect information in the long-sealed-up monuments of distant centuries. The inscriptions of actors in the great historic past or of their contemporaries, have yielded their treasures of knowledge to the learning, ingenuity and patient research of modern investigators. Egypt and Ethiopia, Himyaritic Arabia and Accadian Chaldea, Assyria, Media and Armenia, Persia and Elam, Cyprus and Moab have contributed in large or small measure to our acquaintance with the ancient world ; and the keys will doubtless soon be found to unlock the secrets of Hamathite Syrian, of Etruscan, and of the inscriptions of Central America. Already many deciphered monuments have corroborated the truth of the Bible narrative, and have amplified our knowledge of the times, persons and places of which the inspired writers treat. But, for as long a period as many of these records have lain hidden from mortal view, there has been concealed within the leaves of our well-thumbed Bibles another historical record, brief indeed, yet comprehensive and of infinite value, being the very key to the truthful but often chaotic facts of the monuments themselves. It is in this genealogical record that the brief notice of Jabez occurs.

To the eye of the superficial student, and to the mind of him who would limit God to one way of revealing Himself in his Word, Jabez is, as he was to the Jewish commentators, a wise doctor of the law belonging to the tribe of Judah, who lived at some unknown period in an unknown city called Jabez. Now if Jabez lived after the conquest of Palestine, it must have

been at a time of religious declension, for his brethren evidently did not call upon God. He dwelt in a city of some importance, since a notable family of scribes, mentioned in chapter ii. verse 55, had their abode there, and a city that reflected his dignity since it was named after him ; but the Scriptures, so full of geographical information, tell us nothing concerning this great literary centre, and, when we consult our Hebrew lexicons or manuals of Scripture antiquities, we learn that Jabez was "an unknown town in the tribe of Judah." But Jabez was a Prince rather than a doctor of law, for he had a coast to defend against his enemies and to enlarge at their expense. In the Book of Judges we learn that Caleb, the son of Jephunneh, with his nephew Othniel, enlarged the coast of the Kenizzites, who are mentioned lower down in the genealogies which contain the name of Jabez ; but concerning the greater Jabez there is absolute silence. It is plain that this Prince does not belong to the period of the Conquest, for at that time there were none but honourable men and worshippers of Jehovah in all the host of Israel. If again we refer him to the time of the Judges, it is strange that a record which sets forth Tola and Jair, Ibzan, Elon and Abdon should leave us in the dark regarding so worthy a character as this hero of faith. Shall we place Jabez in the time of Israel's sojourn in Egypt ? If so, we must find his city in that ancient land, and, finding it there, we shall, as will shortly appear, be compelled to deny that Jabez was in any sense, save that of faith, an Israelite. Indeed the Gentile origin of Jabez is apparent in many ways. His very name has no signification in Hebrew, much less that which is attributed to it in the text. In order to find such a meaning, the letters of the word must be transposed to form an anagram, and, allowing such a liberty, it would be easy to prove that Zaphnath-Paaneah, and Abrech are Hebrew also. But the most striking evidence of his Gentile origin is found in the statement that he called, not upon *God*, but on *the God of Israel*. He was a proselyte, more honourable than his brethren, because he left the worship of their false gods to implore the favour and protection of the One Living and True.

Let us glance over this fourth chapter of First Chronicles, and find the connection in which Jabez stands. The chapter begins with these words : "The sons of Judah ; Pharez, Hezron,

and Carmi, and Hur, and Shobal ;” and proceeds at once to give part of the genealogy of Shobal. Now Pharez was undoubtedly a son of Judah, and Hezron and Carmi were two of his descendants, but while Hur, the father of Uri, belonged to the same family, we have no evidence that a patriarch so named had a son called Shobal. The name Shobal is not Jewish, and I have proved, in my essay on the Horites and elsewhere, that this Shobal, who is also mentioned in chapter ii. of the same book, is Shobal the Horite, whose line is set forth in the 36th chapter of Genesis. These are the Auritae, or earliest rulers of Egypt, according to the Old Chronicle, the Hor-shesu of the monuments : and some of those mentioned in Chronicles and Genesis must be of great antiquity, as they are the very ancestral gods of the ancient Egyptian line. In Shob-al we recognize Seb-ra, the father of the solar family ; in his sons Reaiah, Manahath, and Onam, the deities Ra, Month-ra (a name which Mr. Osburn in his *Monumental Egypt* identified with that of Manahath), and An-ra ; while his descendants Ahumai and Etam appear as Ahom-ra and Re-Athom. Passing to the line of Asshur, the father of Tekoa, in the 5th verse, we find ourselves among Hittites. Zohar, wrongly called Jezoar in our English version, by the error of substituting a *god* for a *vav*, is the father of Ephron, the contemporary of Abraham, whose name occurs in the 23d chapter of Genesis. Zereth left his memorial in the geographical term, Zereth Hashachar, commemorating his name in conjunction with that of his father Ashchur, which was a city in the neighbourhood of Moab that fell to the lot of Reuben. Another Ashchurite here mentioned is Haachashtari or Achashtari, a word that has no connection with the Semitic languages, and which Gesenius derives from the Persian. He is Ashtar, the great deity of the Hittite enemies of the Egyptians, and, at the same time, the Hasisadra or Xisuthrus of the Accadians of Babylonia, who have recently been connected with the Hittite family by Assyriologists.

Passing over the immediate predecessors of Jabez, we are introduced in the 11th verse to the family of Chelub, the brother of Shuah. The name of Chelub is significant in Hebrew, but those of his descendants are foreign, such terms as Beth-Rapha, the family of the physicians, and Ir-nahash,



the serpent city, together with the general designation "men of Rechah," exhibiting no relation whatever to Hebrew phraseology. Rapha was a Philistine, and Nahash an Ammonian, name. Who again is Shuah, that fixes the relation of Chelub and his family? The only Shuah that connects with the line of Judah is mentioned in Genesis xxxviii. 2, as a certain Canaanite, whose daughter became by that patriarch the mother of Er, Onan, and Shelah. At the 13th verse, the genealogies of the Kenezites, who were a people in the days of Abraham, are given. Professor Plumptre and the Bishop of Bath and Wells have asserted the non-Israelite origin of this family, to which Caleb the son of Jephunneh belonged; and, indeed, commentators must have strangely understood the temper of the ancient Israelites, when they imagined it possible for them to call their children by the name of an unclean animal, Caleb, the dog. The genealogies of the Kenites, who are mentioned together with the Kenezites in Genesis, as a Gentile people inhabiting Palestine in the days of Abraham, are set forth in chapter ii. verse 55, and are continued in the chapter under consideration at the 17th verse. Concerning them, the remarkable fact is noted that one of their number, Mered, married Bithiah, the daughter of Pharaoh. Mered, "the rebel," is not a name that could be honourably borne by any Israelite, even were it probable that a remote descendant of Judah took to wife the daughter of an Egyptian monarch; nor can we understand how such an one could connect with Garmites and Maachathites.

Lepsius and Osburn have discovered Mered and the Pharaoh whose daughter he married. His sepulchral chamber was unearthed at Gizeh and carried to Berlin; his very portrait forms one of the illustrations of Mr. Osburn's book. He was a prince and high functionary in the Pharaonic court, and, at the same time, a royal scribe. His name is given as Merhet, and his royal father-in-law was Cheops, the builder of the great pyramid. So far, therefore, from being a descendant of Judah, Mered must have lived some generations earlier than the entrance of Israel into the land of Egypt. The names immediately following those of the line in which Mered appears are thoroughly Gentile, and some, like Zoheth,

present roots that occur in no Semitic language. Truly, as the writer remarks in verse 22, "these are ancient things."

Ewald looked upon the brief notice of Jabez as one of great antiquity, but I am not aware that any writer has yet given to that prince his true place in the world's history. So far we have found him to be a convert from gentilism to the worship of Israel's God, and a prince who, in spite of disastrous circumstances attending his birth, received special favours from God, including a happy and prosperous life and the extension of his dominions. His surroundings in the genealogies are Gentile, and some of them peculiarly Egyptian. Those who were able to record facts connected with Egyptian history, such as the incident regarding Mered, may be reasonably supposed to have dwelt at some period in the land of the Pharaohs. The recorders, there can be little doubt, were the Kenite scribes of chapter ii. verse 55, some of whose descendants, including the brother-in-law of Moses, entered the Land of Promise and received an inheritance in Israel, with whom, however, they seem never to have amalgamated. An ancient abode of these scribes was the city of Jabez, a city we search for in vain either in Palestine or in the Kenite region of Arabia Petraea.

Turning to Egypt, there is little difficulty in identifying Jabez with Thebez, the famous capital of the Thebaid, and the University of the Upper Kingdom. The forms by which Thebez is represented in the inscriptions are *ape*, *apet*, *aptu*, etc., the initial *T* or *Th* of the Greek word being the Egyptian feminine article, which was frequently employed as a prefix to names of places, and which as a mere locative prefix, meets us in the geographical nomenclature of other lands, as in Thapsacus, a word derived from Pasach. Thebez, therefore, which is also the name of a somewhat obscure town that existed in Central Palestine in the days of the Judges, may appropriately represent T Jabez. It is most probable that the Palestinian Thebez, like those of Asia Minor and Greece, derived its name from the Egyptian original. In the Bible the title of the Egyptian Thebez is No-Ammon, that city having been the great centre of the worship of the divinity so-called, for Ammon, with his wife Maut and son Chonsu, made up the Theban triad. The first records of the

city are those which associate it, not indeed by its name of T Jabez, with the earliest monarchs of Manetho's twelfth dynasty. It appears to have been founded by the Amenemhes and Osirtasens, of whom that dynasty is exclusively constituted.

The name, however, with which it seems most natural to associate that of Jabez, if he be an Egyptian Pharaoh, is that of Apophis, the shepherd, whom all the ancient and most of the modern authorities agree in regarding as the friend of Joseph. He is also called in different lists Apepi, Aphobis, and Apappus the Great. Eratosthenes, who designates him by the latter name, ascribes to him a reign of one hundred years. As a Shepherd King, his name is in some lists preceded, and in others followed, by that of Archles. Now it is not a small coincidence that gives us, in the verse immediately preceding that in which mention is made of Jabez, the name of one of his kinsmen, Acharchel, the son of Harum. Again the shepherd king, Anon or Bnon of the lists, who precedes Apophis, is generally, as for instance by Lenormant and Chevalier, regarded as a misreading of Annoub, who occupies the same position in the Turin Papyrus. But in verse 8 we read :—" And Coz begat *Anub* and Zobebah and the families of Acharchel the son of Harum,—and Jabez, etc." In the Shepherd Kings, Annoub, Archles, and Apophis, we have thus a presumption that Anub, Acharchel, and Jabez may be found.

Who is Coz, the father of this wonderful family? There is, so far as I am aware, only one Egyptian monarch whose name agrees with that of the sire of Anub. This is the Kaiechos of Manetho's second dynasty, the Choos of Eusebius, the Kekeu, whose pyramid, said to be the oldest of Egyptian monuments, Lepsius found at Saccarah, and whose inscription now lies in the Berlin Museum. This Choos is reported by Manetho to have introduced animal worship into Egypt, and thus to have been the originator of a degrading form of idolatry. It is another remarkable coincidence that Manetho makes the first pyramid-builder, not this Kaiechos or Choos, but one Uenephes of the first dynasty, the Anoyphes of Syncellus, and adds the statement that his pyramids were built at a place called Cocheme. The site of Cocheme, which the Armenian version of Eusebius calls Cho, is unknown. Kenrick supposes it to relate to the

Coptic word *Kos*, meaning to embalm. Is it not a little striking then to find that the god who presided over embalment was Anubis. I cannot doubt, therefore, that Anoob, Unephes, Anoyphis, Anubis, denote one and the same historical character—Anub the son of Coz.

Zobebah, the second child of Coz, was a woman, as all lexicographers are agreed, and is mentioned on account of some celebrity that attaches to her personally. The successor of Unephes of the first dynasty is Usaphais, a name not altogether discordant from that of Zobebah, yet not sufficiently resembling it to enable us to found an argument from similarity. Still more unlike is Binothris, who follows Choos of the second dynasty, although the name is feminine, being the same as Benteresh of later Egyptian story. Eusebius calls this personage Biophis, which name compares better with Usaphais. But the confirmation of the identity of the Hebrew and Egyptian lists appears in the statement of Manetho, that in the reign of this sovereign it was decided that women should have the prerogative of royalty. Now, putting together all the facts contained in the forms Usaphais and Biophis, in the double relation to Choos on the one hand, and to Unephes on the other, in the undoubted feminine appellation Binothris or Benteresh, and in the statement that her reign was signalled as the legitimate commencement of female royalty, we find an argument of no small force for the identification of Zobebah, the daughter of one Pharaoh and the sister of another, with the Egyptian queen. As a goddess, since her brother Anub became Anubis, I would be disposed to find in her, as Usaphais and Biophis, his companion deity Bubastis. This Zobebah, however, must be the mother of Jabez.

The deification of Anub can hardly have taken place without raising his father Coz to divine honours. Among the divinities portrayed on the Egyptian monuments there are three that differ from all others in the peculiar form and shading of what may be called the mane or head-dress. These are Chonso, Anubis, and Bubastis. Chonso and Bubastis also agree in being lunar divinities, bearing upon their heads a representation of the moon. In Chonso I have no hesitation in discovering the deified Coz or Choos. He is represented as the son of Ammon, and, with him, one of the guardians of

Thebes or No-Ammon. The mythologists represent Anubis as a subordinate son of Osiris, but his name is frequently compounded with that of Ammon. What is lacking in our knowledge from Egyptian sources, the mythology and legendary history of the Greeks will supply, for the older Greek writers constantly asserted the intimate connection of their theological system with that of Egypt. According to Diodorus Siculus and other writers, the son of the Egyptian Ammon was the Greek Bacchus or Dionysus, and the son of the latter was Oenopion. Dionysus, moreover, was known as Iacchos, and the island which celebrated his worship and over which his son Oenopion is said to have ruled, is that of Chios. Bochart derived Bacchus from Bar Chus, the son of Cush, and made him Nimrod. It is more rational to derive it from the form Pa-chons, in which the Coptic article is prefixed to the name of the divinity Chons. Oenopion, the man of wine and the king of Chios, is undoubtedly Anub son of Coz, the very word Anub denoting grapes in more than one Semitic language. It will be evident that I hold the old doctrine of Euhemerus, that heathen gods were in the main historical characters deified by their descendants, and that ancestor-, not nature-worship, was the origin of all systems of mythology, a doctrine received by the most honest of the Greeks, by all the fathers of the Church, and, indeed, by all reasonable men but a few ancient allegorising philosophers, who were ashamed of their national creed, and some over-poetic souls in the present day. In Ammon, therefore, the father of Coz and great-grandfather of Jabez, I am perfectly convinced that we should find Ammon, at once the son and the grandson of the patriarch Lot. He was one of the late divinities of Egypt. Mr. Osburn connects the fortunes of Moab and Ammon with those of the Hittites, and it is thus appropriate that the mention of Ammon's son Coz, should, in Chronicles, immediately follow that of the Hittite line of Ashchur.

The contemporaneousness of many of Manetho's dynasties, and the actual identity of certain Pharaohs whose names appear in different lists, is a doctrine which has the sanction of most living Egyptologists. We must look in vain upon the monuments for records of the so-called Shepherds, if we regard their greatest king, Apepi, as a distinct personage from Pepi or

Phiofs of the sixth dynasty, who, like the Apappus of Eratosthenes, is said to have reigned a hundred years. This Pepi, as Lenormant says, "was one of the most glorious and powerful kings. The whole country was subject to his sceptre, for his monuments have been found in all parts of Egypt from Syene to Tanis." He subdued the Negroes and Bedouins in the south, and took possession of the Sinaitic Peninsula, at the same time engaging in great public works at home. The most interesting feature in the identification of Pepi with Jabez is that it furnishes us with the name of his father. He is the Othoes of Manetho, the Ati of the monuments, whose reign was one of great trouble and internal strife. Two competitors for the crown, named Teta and Userkara, warred against him; and at last he was put to death by his own guards. We understand now why Zobeab called her son Jabez, and what was the sorrow wherewith she brought into the world a posthumous child. A king from his birth, his whole long life was a reign. He was but a child when Joseph stood before him, and afterwards became, as he himself said to his brethren, "a father to Pharaoh." It was this lad, in whom the honesty and simplicity of youth had not yet been contaminated by the evils of an idolatrous and licentious court, who, taught by the heaven-sent Hebrew captive, became more honourable than his brethren, and called on the God of Israel. Ammon, Maut, Chonso, and Anubis, his ancestors, with all the solar line of Hor, he knew to be but men, unable to save themselves from the power of the grave. So, as we read in the first Sallier Papyrus, "King Apapi took to himself Sutech for Lord, refusing to serve any other god in the whole land . . . he built for him a temple of goodly and enduring workmanship; King Apapi appointed festivals, days for making sacrifice to Sutech with all rites that are performed in the temple of Ra Harmachis." Sutech was the name of a Hittite god, but, inasmuch as it is a form corresponding to the Hebrew Shaddai, there is no more reason for declaring Apapi to have been a Hittite idolater than there would be for making St. Augustine a worshipper of Zeus, because Deus, the name by which he knew God, originally pertained to that divinity. To the Patriarchs Abraham, Isaac, and Jacob, God had revealed Himself as El Shaddai, the Almighty, and by this well-known name doubtless Joseph



declared to Pharaoh the being and the character of his father's God.

The only Egyptian monument which even doubtful tradition connects with the prime minister of Apophis is the great canal that runs parallel with the Nile through a great part of its course, and which is known to this day as the Bahr Jusouf. By this canal Lake Moeris was fed. Now Lake Moeris is a monument of the twelfth dynasty of Manetho, and around the name Moeris cluster many facts that cannot be foreign to the story of Joseph's Pharaoh. The Amenemhes, who began the worship of Ammon, belong to this dynasty, and to them must be attributed the foundation of No-Ammon or Thebes. According to the lists of Manetho and the interpretation of some modern historians of Egypt, the Shepherds followed the twelfth dynasty, but, according to the more trustworthy monuments, that dynasty was immediately followed by the so-called Eighteenth, consisting of the Pharaohs that knew not Joseph and the vanquishers of the Shepherd line. From the monuments we also learn that certain Pharaohs of the Sixth dynasty, in which Ati and his son Phiops of the hundred years occur, were contemporary with others of the Eleventh and Twelfth. Mr. Sharpe observes that Eratosthenes, who professed to have exercised much care in compiling his list, placed Apophis after Osirtesen III. of the twelfth dynasty, although it is proper to add that Mr. Sharpe does not think this arrangement is supported by the monuments. But the Pharaoh who succeeds Osirtesen III. on the monuments is Amenemhe III., and he is universally regarded as the Moeris from whom the lake received its name. Now Bunsen held that Pepi or Phiops of the Sixth dynasty, who is called Merira, was the Moeris of the Labyrinth and lake, and Sir Gardner Wilkinson supposed that Pepi might have been the original king of that name. I am disposed to go further and assert that Pepi Merira of the Sixth, Amenemhe III. of the Twelfth, and Apophis of the Shepherd dynasty, are one and the same. It is certainly remarkable that Amenemhe II., whom we may reasonably regard as the father of Amenemhe III., met with a fate identical with that which befel Ati, the father of Pepi, being put to death, as Manetho informs us, by his own guards of the bed-chamber. All the reforms and public acts which the Bible attributes to the Pharaoh of

Joseph are, by the ancient historians and the evidence of the monuments, referred to monarchs of the Twelfth dynasty. To the same dynasty belongs the famous picture of Benihassan representing the arrival in Egypt of a Palestinian family, which was once supposed to be that of Jacob. So many are the facts that serve to mark the Pharaoh of Joseph as a king of the Twelfth dynasty, that those writers who reject the ancient evidence in favour of Apophis, place the entrance of Israel into the land of Egypt in the reign either of Osirtesen III. or his immediate successor, Amenemhe III. Moeris.

In seeking the reconciliation of such widely different names as Pepi, Apappus or Apophis, and Amenemhe, we must remember that the one is a personal and the other a dynastic appellation. Thebez, called Te Api, was also known as No-Ammon, and the name of its great divinity naturally formed part of the dynastic title of those who not only were Theban kings, but traced their descent from the god himself. It is probable that we owe the knowledge which Egyptian monuments afford of the personal name Pepi to the conversion of the youthful Jabez, and his consequent rejection, so far as his personal inscriptions were concerned, of the idolatrous title Amen-mai, "the beloved of Ammon."

It is true that beyond the fact of the twelfth dynasty being Ammonian and Theban, we have little that serves to connect Jabez, as Amenemhe III., with his maternal ancestors. The name of Amenemhe II. is read Noub or Knephcheres, and may thus designate Anub rather than Ati. If such be the case, Manetho must have erred in referring to him the death he elsewhere attributes to Ati. This Ati could only claim the title Amenemhe as connected by marriage with the family of Ammon in the person of Zobebah, the daughter of Coz. I have evidence, which the limits of this article will not permit me to set forth at present, that Ati was the son of Ophrah, the son of Meonothai, mentioned in First Chronicles iv. 14, so that Osirtesen II., whose name is Meshophra, may represent this unfortunate Pharaoh rather than Amenemhe II.

Once more, however, the Greek traditions, which know Apophis as Epaphus, the son of Io, must help us to unravel the tangled skein of the Egyptian records. The story of Cybele, the site of which is given as Phrygia, is but a version of

that contained in the Egyptian annals, and in the genealogical record of Chronicles. Cybele, an old Queen reigning in her own right, is the lover of Atys, who is put to death before her eyes. Lamenting his death, she roams throughout the earth like Io, and at last brings forth her child Sabus or Sabazius, whose name is intimately connected with the worship of Bacchus, just as Io gave Epaphus to the world. It is a singular coincidence, though I do not count much upon it, that Banier interprets the name Cybele by the Hebrew Chebel—*enfanté avec douleur*, the very expression that the sacred narrative employs in regard to the birth of Jabez. In Cybele, however, another form of this heroine's name, it is not hard to recognise Zobebah. The companion of the Queen and guardian of the youthful Sabazius, who is also called after his father, Atys and Papas, is Marsyas. Now, according to Osburn, the father and guardian of Apophis was Moeris, from whom doubtless he received the surname which makes Pepi, Merira, and Amen-emhe, Moeris. Among geographical terms, which are of great use in connection with early history, when men called their lands after their own names and after those of their ancestors, Ritter points out a Kubeibeh in southern Palestine and near it a Mareshah. This Mareshah I identify with the names Marsyas and Moeris, and find him as a historical personage in the Mareshah who is mentioned in First Chronicles iv. 21, and ii. 42. as the son of Laadah and the father of Hebron. From many sources, which space and the patience of my readers do not permit me to set forth in the pages of this review, I have obtained the information that Laadah, his father, was the son of Ephraim, the son of Midian, whose invasion of Egypt, attested alike by Josephus and the Arabian historians, gave rise to the story of a Shepherd dynasty. To the line of Midian Jabez did not belong, his parents representing two of the families which exercised sovereignty contemporaneously prior to the Midianite invasion. But, inasmuch as the Shepherds are both by the Egyptians and the Arabians termed Aadtous or Adites, it would seem that Ati or Othoes, the father of Jabez, had allied himself with these foreigners, who themselves exercised a petty sovereignty, and that on the death of Ati, Mareshah or Moeris, the son of Laadah, Alites or Salatis, became the guardian of the youthful monarch. This is strictly in accordance with the

order or succession given by Mr. Osburn, as Othoes, Salatis, Moeris, Apophis. He was not aware, however, that Salatis and Moeris had no right to be considered ancestors of Jabez or Apophis, although recognising the fact that their authority was one, not of inheritance, but of guardianship.

The tradition concerning the tragical fate of Ati, the father of Jabez, seems to have been widely diffused in ancient times. Already we have found it embodied in the story of Cybele and Atys, the scene of which is placed in Phrygia. In Lydia, the tale connects with Croesus, whose son Atys was killed by those who should have defended him. In Greece Ati became Actaeon, torn to pieces by his own hounds; and, as Mr. Talbot has shown, the same legend appears in the Izdubar tablets. Since there is so much repetition in the dynasties of Manetho, it is far from improbable that his only king of the ninth dynasty, Achthoes the Atrocious, who did great mischief to the people of Egypt, who fell into madness and was destroyed by a crocodile, is another form of Ati, Othoes, Atys and Actaeon. It is worth remarking that the next monarch named by Manetho is the first Ammenemes or Amenemhe. Diodorus Siculus makes the predecessor of Moeris, whom he calls Mendes or Marrus and characterizes as the builder of the Labyrinth, an Ethiopian named Actisanes, who cut off the ears and noses of offenders, and banished them to Rhinocolura on the borders of Syria or rather Palestine. If Achthoes and Actisanes designate the same person as Othoes or Ati, he is given to history as a cruel and oppressive king, against whom his own people rose in rebellion. The licentious myth of Atys, and the statement by Manetho that Amenemhe II. was put to death by his eunuchs, or guards of the bed-chamber, together with the fact that such *evirati* were almost unknown in Ancient Egypt, seem to indicate that the cause of the rebellion was the introduction into that country of the barbarous oriental custom. Its introduction is also suggestive of a Babylonian connection at this period with the land of the Pharaohs. Such a connection appears on the tablets of Babylonia in the reign of Naram-Sin, the son of Sargon, who conquered Apirak or Avaris, the kingdom of the Shepherds, and also Maganna or Egypt proper. The late Mr. George Smith fixed the date of Sargon about 1600 B.C., a period at

which the conquest of Egypt by a Babylonian king is a historical impossibility. His date should be a century and a half or two centuries earlier, in the stormy time that marks equally the beginning of the sixth, and of the twelfth dynasty, in other words, that which became known as the period of the Shepherd invasion. I have a suspicion that Acharchel and his father Harum represent the Babylonians at this time in some connection by marriage with the line of Coz, and I should not be surprised to find that Harum is the Naram-Sin who actually conquered Egypt. If this be the case, Acharchel may be represented by one of the Babylonian Kurigalzus, as well as by the Egyptian Archles.

I have also discovered in the record of Chronicles the successors of Jabez on the throne of the Pharaohs. The sixth dynasty of Manetho gives us as his successor, and perhaps his son or grandson, Menthesuphis or Methosuphis, whom Mr. Osburn makes the founder of Thebez, the city named after his father, and who, as Mentuhotep, is erroneously placed by the Egyptologists in an eleventh dynasty. This Menthesuphis, called "pure gold of the gods," I identify with Mezahab, *the golden*, who is mentioned in First Chronicles i. 50, and Genesis xxxvi. 39, as the father of a Queen Matred, who, again, is the mother of Princess Mehetabel, the wife of Hadar, an Edomite king that held his court at Pai. In Matred I recognise the so-called Nitocris who follows Menthesuphis in Manetho, and in the list of Eratosthenes is the second from Apappus the Great. The twelfth dynasty of Manetho also ends with the name of a queen, who, however, is called Scemiophris. She is made the successor of an Ammenemes, whose reign lasted but eight years. Mr. Sharpe identifies queen Nitocris with Mykera or Mytera, by whose marriage with Thothmes II., the kingdoms of Upper and Lower Egypt were brought under one sceptre, and whose son Thothmes III. was one of the greatest of the Pharaohs. It was a sister of this Thothmes III., named Mehetabel, who married Hadar, King of Edom, and thus gave to the kings that knew not Joseph a valuable ally on the borders of Palestine. On the death of Jabez, the southern tributaries, descended from an ancient line of local Egyptian monarchs, gained sufficient strength to take possession of the entire Upper Kingdom. By marriage with the heiress of the

Ammonian or Apophian line, one of these kings, Thothmes II., brought the whole land under one sceptre, and proceeded to oppress and expel the Midianite, Kenite, and other Palestinian allies or tributaries, who had been invited to settle in the neighbourhood of the Delta by the wise policy of Jabez or his predecessors. These Midianites, Kenites, Hittites, and Hebrews, and not any series of Egyptian kings, were the original Shepherds of the Manethonic story.

The materials which furnished me with the information justifying a connection between Mezahab and Jabez, so far separated in the lists of Chronicles, were drawn from many sources, including the Sanscrit and other scriptures. But the one legend which most fitly illustrates the connection is that which several Greek authors supply. Many circumstances, too numerous to specify here, led me to find in the legendary Abas, King of Argos, the land of the Egyptian Apis, Io, Epaphus, and Danaus, the Jabez of Chronicles and the Apophis of Manetho. His son Acrisius, the golden, is but a translation of Mezahab. But, better still, in the story of his daughter and heiress, Danae, who was wooed by Jupiter in a shower of gold, we have a myth arising, as Max Müller has shown often to be the case, out of a wrong use of words. *Matred* denotes a shower, and she herself is the golden shower, as the daughter of Mezahab, the golden. The true story, though much corrupted, is that which makes her the mother of the great Perseus by Dictys of Seriphos. Dictys is the natural Greek rendering of the Egyptian Tahuti, which is the true form of Thoth, from whom the kings that knew not Joseph derived their dynastic name Thothmes. But still clearer does the Egyptian connection appear, when we learn that Perseus accidentally killed his grandfather Acrisius at the court of the Larissean king Teutamas. Herodotus was told by the Egyptian priests that Perseus was one of their kings, and a native of Chemmis. His watch-tower was shown in the Delta, and all ancient authorities place the scene of the deliverance of Andromeda by this hero at Joppa in Palestine. He has been identified, time and again, with the Persian Mithras, many traces of whose worship are found in Egypt and Ethiopia. This Mithras has been generally regarded as symbolizing the union of two creeds, and, as a personage, he is made the



mediator between two religions. In reality he was the offspring of a marriage by which not two religions, but two states, were merged in one; and Mithras is but the masculine form of the well-known goddess Mithra, who is Matred his mother, the daughter of Mezahab.

The wide diffusion among savage as well as civilized peoples of the same ancient legend, has been the theme of many students of mythology and folk-lore, and writers, like Sir G. W. Cox, the author of *Aryan Mythology*, have striven to account for the phenomenon by imputing to the people of antiquity a faculty, for the existence of which they have no other evidence than the myths themselves—a faculty which compelled them to personify according to set forms the objects and powers of nature. But even if it were possible for any modern Niebuhr to nullify the almost universal testimony of the Greek historians and poets to an ancient connection between the populations of Egypt and Hellas, there would still remain an evidence of such a connection that no adverse criticism can touch. It is stated briefly in the title of one of the Records of the Past: “The Invasion of Egypt by the Greeks in the reign of Menephtah.” This Menephtah is supposed to have been the Pharaoh of the Exodus.

We have learned, then, that certain Kenite scribes, probably of the family of Jethro, the father-in-law of Moses, carried with them into Palestine the genealogies of Egyptian Pharaohs and other Gentile chiefs, which their ancestors and predecessors in office had placed on record in the city of Thebez. Expelled from this seat of learning, and from the land of Egypt by a new dynasty that had no sympathy with their pure religion, they had carried these treasures and their faith into the peninsula of Sinai, where Jethro became the priest of Midian, and worshipped, as the great king Jabez had appointed, Joseph’s God, El Shaddai. Why the inspiring and guiding Providence, that caused these truthful and invaluable documents to be placed in the canon of His Scriptures, permitted them to be annexed to, I dare not say confounded with, the brief genealogies of Israel’s tribes, and interspersed with the purely Jewish genealogies of David and the Levites, is a question hard to answer. I do not speak of the ten years and more of my leisure that have been spent in the vain

attempt to reconcile these genealogies (always excepting those of David and the Levites) with others given in the Word of Inspiration; for some who have preceded me have given the better part of a lifetime to the same great task, and have met with similar failure. But now we know how right and good it was that failure should attend such an effort. Of what value after all would it have been to the Church or the world to know the names of men that had no record on the page of history, even though they had Abraham for their father? Here, on the contrary, in the part of Scripture that has long been a sealed book, a very mine of knowledge, or of materials for correcting and arranging information elsewhere obtained, lies open to the student, and will soon, I trust, lie open to every intelligent reader of the Word of God. And yet, in comparing the brevity of the record that sets before our eyes the whole history of the ancient world with the fulness of the Church's story, there is impressed upon the mind a lesson of infinite wisdom—the smallness in God's sight of what man deems great.

By the internal evidence of the short account of Jabez, given in Chronicles, we have found him to be no Israelitish doctor, but a Gentile prince, whose life presented a marked contrast to those of his fellows in that he called upon the God of Israel. An undoubted reference to Egyptian history in the brief mention of Mered, the son-in-law of Cheops (who is the Joab of 1 Chron. iv. 14, and appears as the son of Seraiah, the Soris who precedes Cheops) furnished presumptive evidence of the Egyptian origin of Jabez. An examination of the whole chapter sufficed to indicate that its genealogies are not Israelite, and that, in its very commencement, we are introduced to the beginnings of Egyptian history in the persons of the Auritae or first rulers of the Nile valley, the Horites of Bible story. And the name of Jabez, a seat of learning and the city of the royal proselyte, has been found in the Egyptian Thebez. This name should have carried us at once to the twelfth dynasty of Manetho, whose Amenemhes and Osirtasens were the earliest rulers of the famous city so called. But the universal testimony of ancient writers could not, in the meantime, be disregarded, and as this testimony points to Apophis, the shepherd, as the only royal Egyptian convert, his identity with Jabez was taken

for granted. Our only important record of Apophis is that contained in the First Sallier Papyrus, which, although written by an enemy, corroborates the story of Jabez's conversion, and represents him as relinquishing the worship of Egypt's national divinities for that of one God, Sutech or Shaddai, the Almighty. The monuments afforded no information concerning this great monarch, a circumstance altogether unaccountable when we consider the important events by which, according to the book of Genesis, his reign was marked. But these monuments do speak out regarding a powerful Pharaoh named Pepi, who, according to Brugsch, was censured by king Sken-n-re of the so-called eleventh dynasty for favouring the Shepherds. This Pepi is universally recognised as the Phiope of Manetho's sixth dynasty, who reigned a hundred years, and by this remarkable circumstance coincides with the Apappus of Eratosthenes, in whose name we are brought back to Apophis, the shepherd. We are told that he extended his borders on every side, and that the whole of Egypt was subject to his sceptre. The hundred years of a useful and prosperous reign, the widely extended empire, are the comment of history upon the brief Bible statement "God granted him that which he requested," when he prayed—"Oh, that thou wouldest bless me indeed, and enlarge my coast, and that thine hand might be with me, and that thou wouldest keep me from evil, that it may not grieve me."

The incidents furnished by Manetho and the monuments concerning the father of Phiope or Pepi explained how it was that "his mother called his name Jabez, saying, Because I bare him with sorrow." His father's reign, unlike his own, had been one of strife and bloodshed. He had called to his assistance against Teta and Userkara, competitors for the throne, foreign tribes who took from his name Ati their designation of Aadous or Adites, and whose original pastoral occupations gained for them and for the dynasty they supported the name of Shepherds. Other Egyptian and Greek traditions have enabled us to see in Ati a cruel and probably a licentious king, the inaugurator in Egypt of the barbarous harem system of the East, whose wife proper, however, was a queen in her own right, no longer in the bloom of her youth, the Cybele of a strange and shameful story. Whether by the unfortunates whom his cruel policy had deprived of manhood,

or by the foreign tribes he had called to his assistance, Ati was put to death, leaving his queen, Zobebah, the mother of a posthumous child. Her husband dead, his murderers within the walls of her palace, her enemies emboldened to renew the strife for empire, and, perhaps in addition to all this, a Babylonian invasion upon her borders, we can understand how Jabez was her Benoni and Ichabod, and her exclamation, "I bare him with sorrow." It is not a little remarkable, as has been already stated, that the Abbé Banier and other students of mythology explain Cybele, the commoner name of Cybebe, by the Hebrew word *chebel*, "to bring forth with pain."

The Phrygian legend of Cybebe, originally no doubt a legend or tradition from Apirak or Avaris, the land of the so-called shepherds, has given us the clue to the subsequent history of the family of Ati. This wife of the murdered Atys and mother of Sabazius found a friend in Marsyas. Among the Palestinian or Arabian tribes whom Ati had invited to aid him against his enemies was a Midianite family, probably in the line of Ephraim, whom Josephus and the Arabian historians represent as an invader of Egypt. The Midianites, as we learn from the story of Joseph, were in friendly relations with the Shepherd dynasty, and their name, as Matennu, long denoted a class of Egyptian mercenaries. The chief of these Midianite warriors and the son of Ephraim was Laadah of the Chronicles, known to Egyptian history as Alites or Salatis, the leader of the Shepherds; and his son Mareshah, the Moeris of the Egyptians and the Marsyas of the Greek tradition, became the friend of the widowed Zobebah and the orphan Jabez. Assuming the command of the faithful Egyptians and their allies, Laadah and his son subdued the revolted, overcame the claimants for the throne, and drove them far into the Upper Kingdom, where, unable to regain their lost dominion, they were fain to content themselves with censuring Pepi or Jabez for employing the doughty shepherds in his service. In gratitude doubtless for such signal benefits, the youthful Jabez added to his name that of the wise and warlike Midianite who had been to him a father, and called himself Pepi Merira, Jabez of Mareshah. If we rely upon ancient testimony, and find that Jabez was a king from the day of his birth, we see Joseph

appearing before a mere child in his eighth year. The use of the third person in the address of the chief butler to Pharaoh, when he said, "me *he* restored unto mine office and him *he* hanged," may not be significant, but again it may point to one different from the youthful monarch, and exercising sovereignty in his name, in other words to Mareshah or Moeris. If this be the case, we may presume that since his act of judgment upon the two officials he had died, and that Joseph became his successor as the royal adviser and viceroy. At any rate we know from Joseph's calling himself "a father to Pharaoh," though he was but thirty years of age when he stood before him, that Jabez must have been at best a youth; and the fact that Joseph was exalted to the highest position under the king would seem to indicate the previous death or withdrawal from office of the Midianite regent.

Jabez being the Apophis and Pepi of the lists and monuments, it was to be expected that Egyptian history should at least mention those who in Chronicles are placed in proximity to this honourable Pharaoh. Accordingly we found Anub, his uncle, and Acharchel, his kinsman, in the Shepherd dynasty, as set forth by Manetho and the Turin Papyrus under the forms Anoob and Archles, two names so uncommon as to take their resemblance to those of Chronicles out of the sphere of mere coincidence. Seeking for a further recognition of Anub, who as Anubis is mentioned together with Hercules or Acharchel in more than one ancient list of Egyptian divinities, he was discovered in Uenephes of the so-called first dynasty of Manetho. As the first pyramid builder, and by Cho or Cocho, the site of his pyramids, he connected with Kaiechos or Choos, the Kekeu, whose pyramid is regarded as the oldest Egyptian monument, and whom Manetho places in his second dynasty. Since there is good evidence of the multiplication of dynasties and of individual Pharaohs by this historian, it is not unlikely that Kenkenes, the immediate predecessor of Uenephes in the first dynasty, is but a corrupted form of Kaiechos or Choos, who is Coz the father of Anub. If we identify Chons the Theban god with Kaiechos, the form Kenkenes is capable of easy explanation. I have not yet indicated the monumental Anub; as a pyramid builder, I hold him to have been Kneph Chufu, the contemporary, during the latter

part of the reign of Cheops, with that illustrious Pharaoh. The initial letter of Anub is the Hebrew *ayin*, which often receives the power of *g* or *c* in transliteration into other languages. Thus Canopus and Anubis are the same term. The surname Chufu he must have acquired from some alliance with the house of Cheops or Joab. In Usaphais, the successor of Uenephes, and in Biophis or Binotheris, who follows Choos, Zobebah, the daughter of Coz, and sister of Anub, appeared, as the first female sovereign in the land of Egypt. Seeking the aid of the other records it was found that Greece knew Anub, the man of grapes, and Uenephes, the king, under the name of Oenopion, king of Chios, the son of Bacchus, the god of wine, whose ancient worship connects with Cybebe and Sabazius. This Bacchus again was the son of Ammon, according to the mythologists, and thus reveals his Egyptian origin. In Thebez was his seat; and Chonsu was his son, who, by the representations of divinities upon the monuments, is allied with Anubis and Bubastis. Bubastis, as the goddess of the moon, which she is portrayed as bearing on her head, must be the Greek Io, mother of Epaphus, and Zobebah, mother of Jabez. These were late divinities compared with the old solar line of Ra, and came into note only when the twelfth dynasty began its reign. Now, placing the Hebrew line alongside of the maternal ancestry of Jabez, the four generations, Ammon, Coz, Zobebah, Jabez, may easily coincide with the three, Isaac, Jacob, Joseph, and give us in Ammon, the god, the son of Lot, for Ammon and Isaac were contemporaries. It is true that we have little else on which to base this identification, save the undoubted Egyptian origin of the Moabite god Chemosh, and the fact that in the story of the *Theban* Niobe many mythologists have found a reminiscence of Lot's wife.

But the name of Ammon conducted us to Thebez or No-Ammon and to Manetho's twelfth dynasty. There we found, with the deities Ammon and Chons, the Pharaohs named Amenemhe after their ancestor, one of whom had the same fate as Ati, the husband of Zobebah. It was, however, in Amenemhe III. Moeris, that we met with the great Egyptian builder and legislator, who may fitly represent the Pepi Merira of the sixth dynasty. If the record of Chronicles be true, which, apart from its appearance in the most truthful of all books,



should be established by the fact that the men who handed it down were the contemporaries in Egypt and in Thebez itself of those whose names it commemorates, then it follows of necessity that this Theban dynasty is that in which Jabez occurs. In order, therefore, to restore the history of Jabez to the world, all the glories of the reign of Moeris must be added to those of Pepi Merira and the obscure notices of Apophis. As we have seen, many modern writers place Joseph under a Pharaoh of this dynasty, feeling compelled to do so by the coincidence of the reforms introduced by the Hebrew viceroy, as these are recorded in Genesis, with those attributed to the Osirtesens and Amenemhes. The most ancient monument that marks the site of On or Heliopolis, the city whence came Joseph's wife, is that of Osirtesen I.

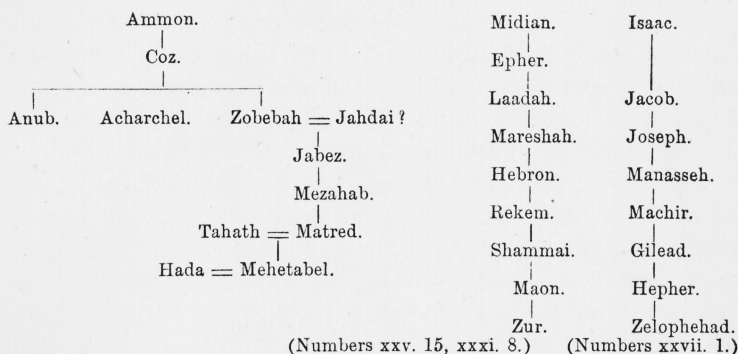
The materials at my disposal are not such as to enable me to give the Pharaohs of the twelfth dynasty their individual places in the scheme of Chronicles. The present system of chronicling the monarchs of Egypt by their dynastic titles is as absurd and useless as it would be to call the English John, Plantagenet III., and Elizabeth, Tudor v. The Pharaohs had simple names like other people, and these names, such as Cheops, Schafra, Pepi, are the only ones by which they can be identified in other records. For they do survive in other records, not only in that contained in the book of Chronicles, nor in those which Sanscrit and Persian, Greek and Latin authors have written, but also in the oral tradition of far-off peoples in whose ears the name of Egypt has never been breathed. And one great mission of the long-neglected chapters with which this paper has been occupied is to reduce to system and unity all these old legends of the world's second infancy, and prove that God has made of one blood all nations of men.

It was no part of my scheme to reduce the alleged antiquity of the Egyptian annals and place the patriarch Abraham not many generations later than their commencement. I had no theory to work out, no preconceived notion to prove true. The study of Chronicles led me, whether I would or not, into Egypt, astonishing me more, perhaps, than any of my readers may be astonished with the new revelation the book unfolded, when read in the light of the ancient glories of that historic land. Nor did it diminish these glories to find that Abraham

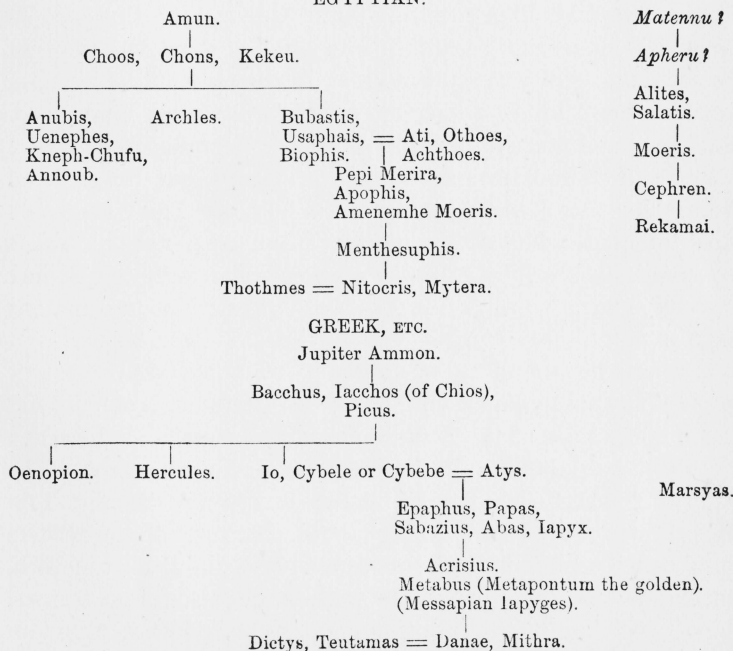
must have been the guest of one of Zoan's most ancient Pharaohs, or that Isaac halted on its borders before Cheops reared his pyramid. Such, however, are among the results obtained from the study of the one Pharaoh, whom the Word of Inspiration commends as more honourable than his brethren, now no longer to be known as Apappus Maximus, but as Jabez the Good.

JOHN CAMPBELL.

### THE GENEALOGY.



### EGYPTIAN.



Marsyas.



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## HITTITES IN AMERICA.

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Perhaps the most startling and important discovery ever made in comparative philology is that announced some time ago by Dr. Hyde Clarke in his "Khita and Khita-Peruvian Epoch." The Khita of the Egyptian and Assyrian inscriptions, whose records in Carchemish and in Asia Minor have recently been discovered by the Rev. Professor Sayce, are the Hittites of Bible Story, a large and powerful confederacy that ruled for a time the whole of Palestine, invaded and occupied for many years the Lower Egyptian Kingdom, and afterwards measured their strength with the Assyrian monarchs, as lords of Mesopotamia and Syria. As late as the reign of Jehoram, son of Ahab, they are mentioned in the book of Kings as a great and warlike people, and the Assyrian records furnish still later accounts of their hostilities. Then they disappear from the page of authentic history, and find mention in the legendary stories of the Mohammedan writers of Persia and neighboring countries, as inhabitants of Touran and allies of the Tartars and Chinese. Sadik Isfahani, the geographer, places Khita in the northern part of China; and Katai or Cathay, the name by which the Celestial Empire was known to Marco Polo, and to Europeans in general for a long period, is but a survival of the same ancient national designation. In the time of Strabo, the Cathaci of Cathaia were still in the vicinity of the Punjaub, from whence a portion of them may have passed to farther India, for Dr. Hyde Clarke

says: "Kitaya too, or Indo-China may be only another form of Khita." There seems to be good evidence for believing that many of the Khita or Hittites of Mesopotamia and Syria, not being maritime peoples and unable therefore to maintain their independence by setting the sea between them and their Assyrian enemies, took refuge among the mountains of Armenia and the Caucasus. Thence, moving along the southern shore of the Caspian, they became the enemies of the Aryans, at first Persian, afterwards Indian, until, passing into the region of the Himalayas, they found a brief respite in Thibet. There they became the neighbors of the Chin or Chinese, with whom they are constantly associated in Persian legendary history. From this point the Khita divided and spread in two directions, the one southward to Khitaya or Indo-China, the other north-east towards the waters of the Amoor or Saghalien, in the Kathai of Mediæval times.

With these Khita Dr. Hyde Clarke has connected the Peruvians, making the Indo-Chinese peoples, the Burmese, Siamese, Peguans, Cambodians, Annamese and Kariens, the connecting link. He supposes, therefore, a passage of the Khita from the Indo-Chinese area by the Malay Archipelago and the Polynesian Islands to Peru, where he thinks settlement may have taken place so far back as from three to five thousand years ago. It may naturally be asked, however: "What do we know of the language, appearance, arts, etc., of the Khita?" and the answer is: "Very little." Of their language we have only a few proper names, like Khita-sar, Mara-sar, Kirep-sar, from which, as has been shown by the Rev. Professor Sayce, we may learn that the Khita were Turanian, inasmuch as the word *sar*, an Accadian term denoting king or chief in the nominative case, follows its genitive according to Turanian order. In regard to religion or mythology, we know also that their great divinity was Sheth or Ashtar. It is supposed that the Hamathite inscriptions are Hittite, with those in Carchemish and in Asia Minor; but, inasmuch as these are not yet deciphered, nothing is added to our knowledge from that source. In regard to the appearance of the Khita, authorities differ so widely that we are left in doubt as to whether they were bearded men, dressed in the Assyrian fashion, Tartars with pig-tails and mustaches, as they are depicted at Abusimbel, or beardless savages with breech clouts and scalp-locks. The solution of the problem may be that the Hit-

tite confederacy embraced within it all these different features. From what source then has Dr. Hyde Clarke obtained materials for a comparison of the Khita with the Peruvian? That source is the Accad, or ancient language of the primitive inhabitants of Chaldea, vocabularies of which are preserved in Assyrian tablets, together with bilingual records and treatises. The Accadians were undoubtedly a Turanian people, the predecessors of the Semitic occupants of the Tigro-Euphrates basin, and their language bears a well defined Turanian stamp. Assyriologists generally refer it to the Ugrian family as kindred to the Lapp, Finn, Magyar, etc. Still the Accad differs from the other members of this family in its constructions. Like them, it employs postpositions and postpositional pronouns, and places the verb after its regimen. But, unlike these languages, it places the nominative before the genitive and the adjective after the noun, as do the Celtic dialects. In the postposition of the genitive, it also differs from the Khita language as indicated by its few remains. But the Khita *sar* is a thoroughly Accad word, and Ashtar, the god of the Khita, can be no other than Hasisadra of the Accadian mythology. Instead, therefore, of employing the term Accad, Dr. Hyde Clarke takes the word Khita as more comprehensive, being convinced of the essential unity of the Accadian and Hittite populations.

It is worthy of note, however, that the ancient rulers of Chaldea termed themselves "Kings of Sumer and Accad," and reference is constantly made to this double constitution of the monarchy, as important apparently as the later distinction between the Medes and Persians, as elements in one nationality. True there survives no Sumerian grammar or dictionary as distinguished from the Accadian, so that full license has been afforded to philologists to denote the language by either name, or to suppose that one of them, Sumer or Accad, was a Semitic dialect and the parent of the later Chaldean. From the double character of Accadian grammar, as partly Turanian and partly Semitic or Celtic, from the presence of a large number of purely Celtic words in the language alongside of others as purely Turanian, and from the very name Sumer itself as related to Kymri, with other facts which will come out in the sequel, I am compelled to the conclusion that Accad, as we possess it, is a compound language, in which Khita or Accad proper exists in union with Celtic or Sumerian, both as regards grammatical and



verbal forms. As the Celtic connections of the Accad find illustration in America and elsewhere along the line of Khita migration, I subjoin a brief comparison of words in the two languages.

ACCAD (SUMERIAN).		CELTIC (CYMRIC).		
		<i>Erse.</i>	<i>Gaelic.</i>	<i>Welsh.</i>
all .....	kak.	gac.	....	....
below .....	cit.	....	....	isod.
body .....	urus.	....	urra.	....
black .....	mi, amas.	....	....	much.
.....	dir.	....	dorch.	....
break .....	dub.	....	....	dofi.
build .....	duk.	....	tog.	....
burn .....	luga.	....	....	llosgi.
city .....	uru, eri.	(ker....Armorican)....	....	caer.
.....	murub.	....	....	mamdref.
copper .....	zabar.	....	....	copr.
.....	urud.	....	....	elydn.
country .....	eur.	....	....	goror.
.....	lat.	....	....	gwlad.
cover .....	dak.	teigh.	....	....
cut .....	tar.	....	....	tori.
.....	khal.	....	....	cyllellu.
dawn .....	khur.	....	....	gwawr.
day .....	ud, utu.	....	....	dydd.
die, death .....	be, bat.	....	bas.	....
.....	durgu.	drochu.	....	....
demon .....	telal.	....	....	ellyll.
descend .....	turi.	....	teirinn.	....
desire .....	sem.	caemh	....	....
dream .....	biru.	....	bruadar.	breudwydd.
eye .....	limta.	....	....	lhyiad.
.....	ud.	aedh.	....	....
end .....	dun.	....	dunadh.	....
father .....	ad.	....	....	tad.
family .....	tsil.	....	....	tylwyth.
.....	seslam.	....	....	cystlynan.
famine .....	sagar.	....	sioeras.	....
fear .....	tum.	tim.	....	....
foundation .....	pin.	....	bun.	bonad.
ghost .....	gibil.	....	....	gwyll.
glory .....	impar.	....	....	ymfawrygu.
go .....	du.	....	....	dos.
hand .....	id.	....	....	adaf.
.....	gap.	eib.	....	....
have .....	tuk.	tog.	....	....
head .....	pir.	bar.	....	....
heaven .....	enum.	....	neamh.	....
hero .....	gudhu.	....	....	cadgun.
high .....	tal.	....	....	tal.
.....	annab.	....	inbhe	....
house .....	duku.	....	tigh.	....
image .....	lani.	....	....	llun.
insect .....	sadugucunu.	....	....	ednogyn.
kill .....	bat.	bath.	....	....
kindness .....	gam.	....	....	cymwynas.
king .....	ara.	aireach.	....	....
lift .....	aganateti.	....	....	cynndo.

## ACCAD (SUMERIAN).

## CELTIC (CYMRIC).

	<i>Erse.</i>	<i>Gaelic.</i>	<i>Welsh.</i>
long . . . . .	puda.	fada.	....
man . . . . .	khairu, karra.	cearn.	gur.
messenger, news.	succal.	sgeul.	....
moon . . . . .	aeu, es.	esga.	....
	lid.	....	llenad.
mountain . . . . .	tal.	tula.	....
mouth . . . . .	ca, gu.	....	ceg
multitude . . . . .	caradin.	....	gwradd o ddynion.
	dugu.	dese	....
	khig.	....	haig.
nail . . . . .	ebin.	....	ewin.
old . . . . .	sakus.	saigheas.	....
perish . . . . .	busus.	....	basaich.
point . . . . .	gir.	....	cor.
	rum.	....	rim.
proclaim . . . . .	gude.	....	cyhoeddi.
property . . . . .	euda.	....	cuid.
red . . . . .	gusei.	....	coch.
repeat . . . . .	ili.	....	ailadrodd.
rest . . . . .	eus.	....	cws.
road . . . . .	cas.	casan.	....
run . . . . .	riati.	....	ruith.
sea . . . . .	ab.	....	aibheis.
seed . . . . .	kul.	....	seol
seize . . . . .	tab.	....	(take) tybio.
servant . . . . .	teri.	ara	....
sheep . . . . .	ua.	oi	....
sick . . . . .	tura.	....	drwg.
	pad.	....	bochd.
side . . . . .	usur.	....	ochr.
soldier . . . . .	erim.	....	arwron.
	mas.	amas.	....
sun . . . . .	zal.	....	hual.
tribute . . . . .	gun.	....	....
warrior . . . . .	gurus.	....	curaidh.
water . . . . .	a.	....	aw.
white . . . . .	uknu, sigunu.	....	can, gwyn.
	bar.	....	pur.
woman . . . . .	dam.	....	dynes.
	rak, khiratu.	....	gwraig.

Traces of the Celtic as distinct as those which survive in the Accad vocabulary meet us again in a region that must have been largely subjected to Khita-Sumerian influences. When the Hittite invaders of Egypt were driven out by the powerful Pharaohs of the eighteenth dynasty, they did not all return to Palestine. Some seem to have passed far to the south, there becoming Nubians or Barabra; and a large body gradually spread from the Libyan border along the whole southern shore of the Mediterranean, where they were known as Libyans or Berbers. These extended as far as the Canary Islands, where they called themselves Guanches. Many writers have insisted upon the Celtic

relationship of the Berbers and Guanches, and, in particular, M. E. Pégot Ogier in the book translated by Frances Locock under the name of "The Fortunate Isles." It must be confessed, however, that this writer, while asserting "that the Guanches may be put down as exclusively of Celtic origin," does not proceed to the proof of the statement, except by comparing a Guanche temple with similar Celtic remains at Carnae in Brittany. Megalithic structures of the same character have been found throughout the Berber area, such as that at Bless in Tunis, described by Frederick Catherwood in the Transactions of the American Ethnological Society. Jackson, in his account of travels in Barbary, gives special prominence to the Berber tribes who call themselves Zimuhr and Amor, whom he regards as descendants of Canaanitic Zemarites and Amorites. Of the former he says: "They are a fine race of men, well grown and good figures; they have a noble presence and their physiognomy resembles the Roman." Writing of the Amor, whom, on account of their bravery, the Sultan Muhamed called the English of Barbary, he says: "When the Sultan Muhamed began a campaign, he never entered the field without the warlike Ait Amor, who marched in the rear of the army; these people received no pay, but were satisfied with what plunder they could get after a battle; and accordingly, this principle stimulating them, they were always foremost in any contest, dispute or battle." The names Zimuhr and Amor, together with Gomera, that of one of the Canary Islands, tell strongly in favour of a Sumerian or Cymric connection of the Berbers. Sir Henry Rawlinson, in his Essay on the Alarodians of Herodotus, gives the name Burbur to the Accadians (? Sumerians), and, although the correctness of this is disputed by Professor Sayce, I am disposed to think that the veteran Assyriologist is right. It is at least a remarkable coincidence that links Sumerian Burbur and Zimuhr Berbers by a double nomenclature and without any intention on the part of Sir Henry Rawlinson so to unite the widely separated peoples. The grammar of the Berber has been studied by Mr. Newman and others, and has been denominated sub-Semitic, but anyone acquainted with the Celtic tongues knows that they also might be called sub-Semitic in character. The marking of inflexion by internal vowel changes, the paucity of tenses in the verb, and the postposition to the verb of the personal pronoun, are Semitic and not Indo-European. Now the two tenses of the Berber verb, the deriva-

tion of verbal forms from the imperative, the formation of the plural in nouns by changing the medial vowels or suffixing *n*, the use of *n* as a mark of the genitive and *ghi*, *ze*, *zigh* of the dative, with many other points of structure, are purely Celtic. Finally, when we turn to the Berber vocabulary, forms that find hardly any analogies outside of the Celtic tongues come to confirm the evidence for a Sumerian and Cymric origin. The following are a few of these :

## BERBER.

bad .....	duny, <i>Shelluh</i> .
	dirith, <i>Berber</i> .
	isan, <i>Shelluh</i> .
barley .....	ahoren, <i>Guanche</i> .
basket .....	carianas, “
boy .....	guanch, “
	ayel, <i>S</i> .
bread .....	aghroum, <i>B</i> .
call .....	kerar, “
come .....	adude, eddon, <i>B</i> .
cow .....	tafunest, “
cup .....	bukul, “
dart .....	banot, <i>G</i> .
drink .....	soo, iswa, <i>B</i> .
	jowah, <i>Showiah</i> .
eat .....	itch, <i>B. Sho</i> .
eye .....	elu, <i>S</i> .
	teeat, <i>Tuarik</i> .
face .....	odom, <i>B.</i> , woodmis, <i>Sho</i> .
father .....	dada, <i>S</i> .
fire .....	aphugo, <i>S.</i> , tefoukt, <i>B</i> .
	timis, <i>B.</i> , temsa, <i>Siwah</i> .
foot .....	thareet, <i>Sho.</i> , adar, <i>B</i> .
fowl .....	eizid, <i>B</i> .
girl .....	wilt, <i>S</i> .
give .....	ross, “
god .....	acoran, “ <i>G.</i> , mkoorn, <i>B</i> .
good .....	elali, <i>B</i> .
go .....	maat, <i>T</i> .
head .....	eagph, <i>S.</i> , ikhf, <i>B</i> .
heaven .....	igna, <i>B</i> .
horse .....	ayeese, <i>S.</i> , yeese, <i>Sho</i> .
hog .....	tamacen, <i>G</i> .
	amuran, <i>S</i> .
king, chief .....	quehebi, <i>G</i> .
lamb .....	ana, “
leg .....	ighas, <i>B</i> .
man .....	oggue, <i>Si</i> .
	meddan, <i>B</i> .
	coran, <i>G</i> .
milk .....	aho, <i>G.</i> , acho, <i>B.</i> , achi, <i>Si</i> .
mother .....	mamma, <i>B</i> .
mountain .....	aya, “
	iddra, <i>S</i> , athraar, <i>B</i> .
neck .....	arguh, <i>B</i> .
nets .....	tararach, “

## CELTIC.

dona, <i>Gaelic</i> .
drwg, <i>Welsh</i> , droch, <i>Gaelic</i> .
asan, <i>Erse</i> .
eorna, <i>G</i> .
crannog, <i>E</i> .
oganach, <i>G</i> .
gille, “
aran, “
goirim, <i>E</i> .
thig, <i>G.</i> , dynesu, <i>W</i> .
fionn, <i>E</i> .
pacol, <i>W.</i> , bachla, <i>E</i> .
bansach, <i>E</i> .
sugh, <i>G</i> .
yv, <i>W</i> .
ith, <i>G</i> .
suil, “
aedh, <i>E</i> .
aodann, <i>G</i> .
tad, <i>W</i> .
bacht, <i>E</i> .
tan, <i>W.</i> , teine, <i>G</i> .
troed, <i>W.</i> , troidh, <i>E</i> .
ehediad, <i>W</i> .
llodes, “
rhoi, rhoddi, <i>W</i> .
crom, <i>E</i> .
llesol, <i>W</i> .
imich, <i>G</i> .
copa, <i>W.</i> , cab, <i>E</i> .
eon, <i>Armorican</i> .
each, <i>G.</i> , ech, <i>E</i> .
mochyn, <i>W</i> .
maharan, <i>W</i> . (ram.)
ceap, <i>E</i> .
oen, <i>W.</i> , uan, <i>E</i> .
coes, <i>W</i> .
cia, <i>G</i> .
modh, <i>G</i> .
cearn, <i>G.</i> , gur, <i>W</i> .
as, <i>G.</i> , ceo, <i>E</i> .
mam, <i>W</i> .
ais, <i>G</i> .
törr, “
arusg, <i>E</i> .
dorga, “

## BEEBER.

night.....	id. <i>B.</i>
	ciar, <i>Sho.</i>
nose.....	chunfur, <i>S.</i>
pitcher.....	ganigo, <i>G.</i>
priest.....	faycayg, "
property.....	ajda, <i>B.</i>
	agla, "
report.....	issawal, <i>B.</i>
road.....	abreede, "
servant, slave.	issemg, <i>S.</i>
sheep.....	ikerri, <i>B.</i>
	thikhsi, <i>B.</i> , tihaxan, <i>G.</i>
small.....	imeek, <i>S.</i>
speak.....	guelaine, <i>Si.</i>
stand.....	bidfillah, <i>Sho.</i>
star.....	eran, <i>T.</i>
sun.....	kylah, <i>Sho.</i>
valley.....	douwaman, <i>B.</i>
warrior.....	althayas, <i>G.</i>
water.....	aman, <i>T. Si.</i> , eman <i>B.</i>
wealth.....	agela, <i>B.</i>
white.....	guarn, <i>G.</i>
woman.....	tamergart, <i>B.</i>
wood.....	ikshuden, "
	asroen, <i>S.</i>

## CELTIC.

oidche, <i>G.</i>
ciar, <i>E.</i> (dark.)
comar, <i>E.</i> , fri, <i>W.</i>
cunnog, <i>W.</i>
faigh, <i>E.</i>
eiddo, <i>W.</i>
cail, <i>G.</i>
adchweil, <i>W.</i>
fford, <i>W.</i>
ciomach, <i>G.</i>
caora, "
othaisg, <i>G. E.</i>
cumbach, <i>E.</i>
agallaim, "
sefyll, <i>W.</i>
seren, "
haul, "
domhain, <i>E.</i>
lath, <i>E.</i> , llyddur, <i>W.</i>
amhain, <i>G. E.</i> (river.)
aclaw, <i>W.</i>
guen, <i>A.</i>
merch, <i>W.</i>
coeden, "
crann, <i>G.</i>

The ancient British traditions, preserved by Nennius, Geoffrey of Monmouth, and others, agree in bringing the Celtic population of the British Islands into Europe by way of Northern Africa, and this, whatever the value of these traditions, was in all probability the route by which the Sumerians journeyed westward. But, together with these, or perhaps at an earlier period, there passed into Western Europe that strangely isolated people, the Basques. Their language, which contains many Celtic words, is nevertheless not Celtic. The declension of its nouns is virtually a use of postpositions; its pronouns are postpositional; the verb follows its regimen, and the adjective follows the noun; in all of which it agrees with the Accad. But it differs from that language in placing the genitive before the nominative, in which it agrees with the Khita proper and the general order of Turanian grammar. There is virtually no such thing as a Basque verb, if we except the forms *niz*, I am, *dut*, I have, with the remaining persons, which may be regarded as pronominal affixes with verbal powers to transformed nouns or participles. This is a development peculiar to the Basque as the most isolated of Turanian languages. Yet the want of any true distinction between the verb and the noun is both Turanian and American, and, taken together with the polysynthetic character

of the Basque, has led many writers to compare that language with the forms of speech on this continent. The Rev. Professor Sayce once held a connection or relationship of the Accad with the Basque, but informs me that he has since changed his opinion. Now the Basque I hold to represent the Khita as distinguished from the Sumerian, just as Berber and Celtic represent the Sumerian as distinguished from the Khita. The Accad contains both these elements in combination, so that it would be vain to look for perfect agreement between it on the one hand and any purely Sumerian or Khita language on the other. There are many Accad words in Basque, but the vocabulary as a whole is far less Celtic or Sumerian than that of the Accad.

My grounds for asserting that the Basques are Khita are based on facts in mythological and tribal nomenclature. The great god of the pagan Basques was Haitor, and this name, taken in connection with the geographical and tribal terms Astura and Astures, recalls Ashtar, the god of the Khita. From the annals of Shalmanezzer and other Assyrian monarchs we learn of the existence of a state or states called Khupuskai or Hupuscia situated in the country of the later Nairi, who are generally supposed to be Hittites. While one of these is said to have been in the neighbourhood of Armenia, the other, as adjoining Gozan or Gauzanitis, must have been the region of which Thapsacus was the centre. Indeed Thapsacus, the root of which is Pasach or Psach, is of the same origin etymologically as Khupuskai, and the two forms were probably used indifferently to denote the same place, the Th of the one and the Kh of the other being mere locative prefixes. That Hupuscia had Accad relations is manifest from the appearance of a god Hubisega who occupied an important place in the Accad pantheon, being, according to Professor Sayce, the analogue of the Assyrian Bel. Now one of the Basque provinces is Guipuzcoa, a name suspiciously like Khupuskai, and Pasach, the name of the tribe who dwelt in Khu-Pasach or Tha-Pasach, the abode or town of the Pasach, is identical with the word Basque. The Basques also call themselves Euskara, a form that will meet us again in tracing the migrations of the Hittite stock. Some of the Armenian Khupuskai seem to have taken refuge in the Caucasus, for there, among the Circassians proper, we find the Schapsuch and Abasech, the ancient Abasci of Iscouria or Dioscurias, and the



worshippers of Achaicarus and Pkhah. While Abasech and Pkhah are forms of Pasach and Basque, and Schapsuch or Chapsouke of Khupuskai and Guipuzcoa, Iscوريا and Achaicarus help to explain the name Euskara. Yet, though many Accad and Basque words are found in Circassian, the grammar of that language is neither Accad nor Basque. While in some respects resembling them, it is in all its main features the same as the Japanese and that of the American languages which in my second paper I connected with the Peninsular family.

I have prefaced the inquiry into the question of a Khita or Hittite migration to America with these detailed remarks because my views on the subject differ somewhat from those of the learned author of the "Khita-Peruvian Epoch." Dr. Hyde Clarke makes the terms Khita Peruvian and Sumero-Peruvian interchangeable, and refers to the peoples classified under these names as builders of stone structures. Now I distinguish between Khita and Sumerian, making the former Turanian and mound-builders, or if builders at all in the true sense, founders of cities, while the latter are Celtic and the erecters of megalithic monuments. The latter I propose to recognize by their possession in some form of the Sumerian name, as Zimuhr, Amor, Cymri; the former, by the occurrence in their geographical, tribal or mythological nomenclature of such forms as Ashtar, Hasisadra, Haitor, Astura, Hubisega, Khupuskai, Thapsacus, Basque, Guipuzcoa, Schapsuch, Abasech, Pkhah, Euskara, Iscوريا, Achaicarus, etc. In so doing I necessarily run the risk of passing over many Hittite families, for the Khupuskai can have been but one, and perhaps not the most important, of these. Still it is the only one for which we have data, and fortunately it is sufficient to illustrate the Khita-Sumerian occupation of Peru.

In Peru we find two main stocks, the Aymaras, supposed to be its oldest inhabitants, and the Quichuas, or so called Incas. Their grammatical forms are almost identical, and there is much resemblance in their vocabularies. In its main features the difference between Peruvian and Accad grammar is virtually that which separates the Accad from the Ugrian languages, with which it has been classed. In the use of postpositions, the postposition of the nominative to the genitive, of the noun to its adjective and of the verb to its accusative, as well as in its order of verbal root, temporal index and pronominal suffix, Per-

uvian grammar is essentially Turanian. Dr. Hyde Clarke finds in the name Aymara evidence of Sumerian connection, and this evidence finds confirmation in many facts concerning the Aymaras. The chief seat of this people was about Lake Titicaca, and a short distance from its shores stand the ruins of Tihuanaco, consisting of a large group of immense stones, each from six to seven yards high, placed in lines at regular intervals. It has been fitly termed "a Peruvian stonehenge," and a tradition prevails concerning it identical with that which ancient chroniclers preserve regarding the famous English structure, namely, that it was erected in a single night by an invisible hand. Turning again to the Berber region of Africa, where the Amor live and megalithic structures akin to that at Tihuanaco are found, we discover fuller confirmation. Messrs. Rivero and Von Tschudi in their work on Peruvian Antiquities, speaking of the peculiarity of the contour of the arch of the Aymara cranium, say: "It is proper here to remark that there is a very striking conformity between the configuration of this race and that of the Guanches, or inhabitants of the Canaries, who used also the same mode of preserving the bodies of their dead." The latter allusion is to the practice of mummification, which the Khita-Sumerians must have learned during their occupancy of Lower Egypt, and which

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\* Further evidence for an American connection of the Berber family to which the Guanches belonged is found in the statements of Dr. Le Plongeon and other explorers of Central America, quoted in the admirable work of my colleague, Professor Short, of Columbus, Ohio, "The North Americans of antiquity." Referring to the statue of Chaac-Mol at Chichen-Itza in Yucatan, Professor Short says: "he is adorned with a head-dress, with bracelets, garters of feathers and sandals similar to those found upon the mummies of the ancient Guanches of the Canary Islands." And again: "Dr. Le Plongeon observed that the sandals upon the feet of the statue of Chaac-Mol, discovered at Chichen-Itza, and of the statue of a priestess found at the island of Mugeris, are exact representations of those found on the feet of the Guanches, the early inhabitants of the Canary Islands, whose mummies are occasionally met with in the caves of Teneriffe and the other isles of the group."

Now the language of the Mayas of Yucatan and their mythology are purely Malay-Polynesian, and cannot be associated with those of the Berbers. We must, therefore, regard such remains, differing as they do from the general character of their surroundings, as indicating a temporary occupation of Yucatan at some ancient period by the race which afterwards colonized New Granada and Peru.

appears along the eastern line of Khita migration among the Ainos of Saghalien. "The oven of the Guanches was a hole under ground like that of the Peruvians," says Pégot Ogier; and the same writer informs us that they wore their hair plaited like the Chinese, while Forbes gives the same item of information regarding the Aymaras. The two peoples, Berbers and Aymaras, also agreed in the worship of the sun, and in the performance of sacred rites by virgin priestesses. The following list presents some of the analogies between the Aymara and Berber (Amor, Zimurh, etc.,) vocabularies :

AYMARA.	BERBER.
bad.....hucha, <i>Quichua</i> .	usa, <i>Berber</i> .
bed.....uyu.	usa, "
boy.....jocca.	achicuca, <i>Guanche</i> .
cistern.....huireca, <i>Quichua</i> .	hierro, "
clothes.....isi, ( <i>acsu Atacama</i> .)	ahico, "
cloud.....cquenayu.	esighna, <i>B</i> .
club.....tujur.	tesserer, <i>G</i> .
descend.....lattorana.	itar, <i>B</i> .
dog.....anokara.	abaikour, "
drink.....agua, <i>Quichua</i> .	iswa, "
ear.....hinchu.	amzough, "
earth.....lacca.	elkaa, <i>Showiah</i> .
father.....tata.	dada, <i>Shelluh</i> .
girl.....tahuaco.	thagshishth, <i>B</i> .
give.....chu.	oushe, <i>Sho</i> .
go.....humi.	maat, <i>Tuarik</i> .
good.....alli, <i>Quichua</i> .	elali, <i>B</i> .
head.....ppekei.	fouse, <i>Sho</i> .
echuja, <i>Sapibocono</i> ,	agaio, <i>B</i> .
king, chief....capac.	quehebi, <i>G</i> .
lamb.....una.	ana, "
man.....chacha, hake.	oggue, <i>Sivah</i> .
kkari.	coran, <i>G</i> .
moon.....irare, <i>Cayubaba</i> .	aiur, <i>B</i> .
mother.....mama.	mamma, "
name.....sima, <i>Quichua</i> .	ysma, "
net.....attaraya, "	tararach, "
night.....tuta, "	id, "
nose.....cenca, "	enchar, "
ibarioho, <i>Cayubaba</i> .	chunfur, <i>S</i> .
pot.....paylu, ppucu.	bukul, <i>B</i> .
priest.....pachacuc, <i>Quichua</i> .	faycayg, <i>G</i> ,
raise.....hucaro, "	ikkar, <i>B</i> . (rise.)
sheep.....ccaaura.	ikerri, <i>B</i> .
sit.....utjana.	akeime, <i>Sho</i> .
small.....iscca, ( <i>huchhuy Quichua</i> .)	aacouguee, <i>Si</i> .
star.....huarahuara.	eirie, <i>Sho</i> .
water.....huma.	ahemon, <i>G</i> .
woman.....marmi.	tamraut, <i>S</i> .

What is wanting in the Berber vocabulary is abundantly supplied by the Celtic, as in the following comparison :

AYMARA.		CELTIC.	
	<i>Erse.</i>	<i>Gaelic.</i>	<i>Welsh.</i>
above . . . . .	araja.	....	goruch.
after . . . . .	ucata.	....	gwedi.
all . . . . .	taque.	gac.	....
arm . . . . .	hicani.	....	caine.
belly . . . . .	puraca.	....	bru, bolg.
bitter . . . . .	haru.	....	chwerw.
black . . . . .	chamaka.	....	much.
	chiara.	....	....
blood . . . . .	huila.	....	ciar.
body . . . . .	hanchi.	fuil.	....
butterfly . . . . .	pilpinto.	neach.	....
cloak . . . . .	iscallo.	....	balafen.
die, death . . . . .	hinata.	....	casul.
deep . . . . .	ccorahua.	....	ymado.
dew . . . . .	sullu.	....	craft.
end . . . . .	ccorpa.	....	gw lith.
enter . . . . .	mantana.	....	gorphyn.
equal . . . . .	cusca.	....	myned.
face . . . . .	akanu.	....	cystal.
faggot . . . . .	picho.	cainsi.	....
father . . . . .	tata.	....	fla sg.
flesh . . . . .	aicha. <i>hig Armorican.</i>	....	tad.
foot . . . . .	kayu.	....	....
friend . . . . .	cachomasi.	cas.	....
girl . . . . .	imilla, ppucha. <i>plah. A.</i>	....	cydymaith.
go . . . . .	humi.	....	....
goat . . . . .	paca.	imich.	....
he . . . . .	hupa.	boc.	....
head . . . . .	ppekei.	....	efe.
heal . . . . .	callana.	....	pen.
house . . . . .	uta, ata.	....	gwellau.
king, chief . . . . .	capac.	....	ty.
know . . . . .	yatina.	ccap.	....
lake . . . . .	ecota.	....	adwaen.
lamb . . . . .	una.	....	coch.
learn . . . . .	yaticha.	uan.	oen.
leg . . . . .	chara.	....	dysgu.
louse . . . . .	lappa.	cara.	....
man . . . . .	chacha.	....	lleuen.
	kkari.	cia.	....
mother, . . . . .	mama.	....	gur.
much . . . . .	alloja.	....	mam.
night . . . . .	haipu.	....	llia ws.
no . . . . .	hani.	be.	....
plants . . . . .	liga.	chan.	....
pot . . . . .	payla.	....	llys.
priest . . . . .	pachacuc.	....	pa eol.
rain . . . . .	hallu.	faigh.	....
red . . . . .	pako.	....	gwlaw.
reed . . . . .	eurcura.	base.	....
rest . . . . .	sama.	....	corsen.
see . . . . .	ulla.	....	seib.
serpent . . . . .	katari.	seall.	....
servant . . . . .	yana.	nathair.	....
sew . . . . .	chucuna.	....	gweini (to serve.)
shadow . . . . .	chitua.	....	gwnio.
sheep . . . . .	ccaura.	....	cysgod.
shoe . . . . .	usuta, ojota, isca.	caora.	....
sleep . . . . .	iquina.	....	esgid.
	hun, A.	....	....

	<i>Erse</i>	<i>Gaelic</i>	<i>Welsh</i>
speak .....sana.	....	....	cynanu.
arusina.	....	....	areithio.
stone .....ccala.	....	gall.	....
sun.....vilca.	....	....	hual.
tie.....chinuna.	....	....	cynghlymu.
water.....yaku.	....	uisge.	gwy.
a well.....puco.	....	....	pydew.
white.....hanco.	guen, A.	....	can.
will.....muna.	....	....	myn.
chicatha.	....	....	gogwydd.
woman ....marmi.	....	....	merch.
word.....aru.	....	....	gair.
youth.....huaina.	....	....	ieuaint.

In the preceding lists the following pair of related words exhibits the most striking resemblance:

	AYMARA.	CELTIC.	BERBER.
sheep.....ccaura.		caora.	ikerri.
lamb.....una.		uan.	ana.

Dr. Hyde Clarke finds the connecting link between Sumerian and Aymara among the Cambodians, who call themselves Kammer or Khmer; but in this I am not able to follow him. The Cambodian vocabulary in my possession shews no relationship to Aymara, Berber or Celtic. This may be the fault of the vocabulary, which certainly is far from extensive. But, on the other hand, with a much smaller vocabulary, I find a remarkable collection of Sumerian words in the language of the Ainos, who, whether they relate to the Humeri whom the older geographers place in this region, and who are said to have Mantchu relationships, or not, may fitly connect with Amor and Aymara by their seat, the river Amoor. The Berber analogies are very striking.

AINO.	SUMERIAN.
beard.....creak.	curcais, <i>Erse</i> (hair).
black.....kouni.	can, <i>Accad</i> .
boat.....timma.	tenawine, <i>Berber</i> .
book.....shomotza.	sumuk, <i>Accad</i> .
child.....vassasso.	wagshish, <i>Berber</i> .
chin.....olongyse.	elgeth, <i>Welsh</i> .
day.....tokaf.	thafath, <i>Berber</i> (light).
dog.....enoo.	anu, <i>Aymara</i> .
drink.....horopsee.	srub, <i>Gaelic</i> .
earth.....toui.	tudd, <i>Welsh</i> .
sirikata.	urakke, <i>Aymara</i> .
finger.....yewbee.	biz, <i>Armorican</i> .
fire.....abe.	aphougo, <i>Berber</i> , ufel, <i>Welsh</i> .
foot.....assi.	essa, <i>Accad</i> , cas, <i>Gaelic</i> , ighas, <i>Berber</i> (leg).
heaven.....likita.	tigot, <i>Berber</i> .
man.....okkai, oikyo.	oggue, <i>Berber</i> , ka, <i>Accad</i> , cia, <i>Gaelic</i> , hake, <i>Aymara</i> .
moon.....kounetsou.	cann, <i>Erse</i> .
night.....atziroo.	tiziri, <i>Berber</i> (moon).
star.....noro.	eirie, <i>Berber</i> , huarahuara, <i>Aymara</i> .
sun.....totskaf.	taphoute, <i>Berber</i> .
water.....wakha.	yaku, <i>Aymara</i> , uisge, <i>Gaelic</i> .
woman.....meanako.	bainionnach, <i>Gaelic</i> .



As in my last article in this Journal I furnished proofs of the derivation of the Peruvians in general from the Japanese-Koriak family to which the Ainos belong, it is natural that among the members of this family one or more should be found exhibiting the Sumerian character. It is also to be remembered that the Ainos, like the Berbers and Aymaras, were sun-worshippers, and that, in common with the latter people and the Guanches, they embalmed the bodies of their dead. I therefore hold that the Amoor of the Ainos is in a better connecting link between Sumerian and Aymara than the Kammer of Cambodia. Yet I would be far from denying the Sumerian origin of the Cambodians. I can find no trace of their presence in the Malay Archipelago, and no evidence that they (the Sumerians) or the Khita were ever a maritime people. It may be objected that the Celts were maritime, but it must be remembered that the Celtic population of Wales even, the land of the Cymri, was according to Cymric traditions made up of many stocks, of which that called Cymric seems to have been least addicted to the sea.\*

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\* Since writing this article I have discovered that the Khita consisted of two distinct families, differing widely in language, character and appearance. That family, of the relation of which to the Khita I was ignorant till lately, has all its connections with the Malay-Polynesian and Maya-Quiché peoples in point of language, culture, maritime habits, etc., and undoubtedly followed the route indicated by Dr. Hyde Clarke through Indo-China to the Malay Archipelago and thence to America. The ancient buildings of Java and of Ascension and Easter Islands belonged to their period and form connecting links between Chaldaean and Central American culture. This branch of the Khita must have originated the Central American alphabets, while there is no evidence that the nomadic landmen of Hittite name, with whom this paper chiefly deals, ever originated the art of writing.

In the Chronicon Paschale, Heth is made the father of the Dardanians. These Dardanians have been recognized as allies of the Hittites in the Egyptian inscriptions, under the forms Khairitana, Shardana, etc.; which indicate that the initial letter of their name was Z, so that Zarthan must have been their original designation. With the Dardanians of the Egyptian monuments the Tocchari are generally associated, just as the Teucri are with the Dardanians of the Troade. The important discovery by the Rev. Professor Sayce of Hittite remains in western Asia Minor may thus be accounted for, since Teucri and Dardani once overspread that region. Should it be proved that Carchemish belonged to this branch of the Hittite family, its inscriptions may yet be deciphered by the aid of the Cen-



Having thus distinguished between Sumerian and Khita, I return to the discovery of Dr. Hyde Clarke. He found many points in common in the Accad and Peruvian grammatical systems, and proceeded to an examination of the vocabularies of the two languages, or rather of the Accad on the one hand and the Quichua and Aymara on the other. The result was such an agreement that the affinity of the Peruvian tongues to the Accad could no longer remain a doubtful question. It has thus attracted the attention of many students of ethnology, and among them of Dr. Daniel Wilson, who devoted no small portion of his address before the American Association for the Advancement of Science to Dr. Hyde Clarke's researches in this field. The following is a sample of the agreement between the Accad and Peruvian vocabularies :

ACCAD.	PERUVIAN.
all.....kak.	taque, <i>Aymara</i> .
to be .....gan.	kani, <i>Quichua</i> .
beast .....paz.	uausza, <i>Quitena</i> .
bind .....sita.	huata, <i>Quichua</i> .
bird .....pak.	piseco, “
black .....kug.	coea, <i>Aymara</i> .
body.....su.	uku, <i>Quichua</i> .
brick .....tak.	tica, <i>Aymara</i> .
build.....duk.	utachana, “
choice.....lut.	ahllay, <i>Quichua</i> .
city.....murub.	marca, <i>Aymara</i> .
clothes.....ze.	isi, “
sic.	sau, “ acsu, <i>Atacameña</i> .
cloud .....gan.	cquenayu, <i>Aymara</i> .
cut .....khut.	cuta, “
dark .....amas.	amsa, <i>Quitena</i> .
cus.	kata, <i>Quichua</i> .
death .....khan.	huanhu, “
deer.....lulim.	lluchos. “
dara.	taruco, “ taruja, <i>Aymara</i> .
descend .....turi.	lattorana, <i>Aymara</i> .
determine.....gagunu.	chicatha, “

tral American. The Egyptian monuments present us with admirable representations of both Dardanians and Tocchari. Messrs. Nott and Gliddon in their joint ethnological work have furnished portraits of the Tocchari, taken from these sources, and have drawn attention to their striking peculiarities in regard to features and dress. It is not a little remarkable to find these features and the peculiar head-dress of the Tocchari reproduced on the monuments at Palenque and elsewhere in Central America. It would thus seem that the old Votan tradition which represented several tribes of one family as diverging from an original seat and making their way, some by a land route, others by water, to a Central American home, may be borne out by facts.

## ACCAD.

do, make	.....ru.
dog	.....liku.
drink	.....ca, cagu.
ear	.....pi. cagu.
father	.....ai. ad.
field, garden	.....gan.
flesh	.....uzu.
fish	.....khan. kal.
fire	.....ne. kum.
foot	.....essa.
fortress	.....car.
foundation	.....ur.
girl	.....turrak.
give	.....se, sig.
god	.....hubisega.
gold	.....guski.
good	.....khi, khiga.
grass	.....si.
green	.....khir.
hair	.....sic. muz.
hand	.....su.
have	.....tak.
head	.....ku. pir.
high	.....annab.
house	.....uru. es. duku.
increase	.....la.
king	.....pak.
lamb	.....uda.
law	.....cimmu.
leave	.....gadataccuru.
lift	.....sur. aca.
male	.....uru.
man	.....khairu, karra. tas. gun. sa, ka.
middle	.....ib.
morning	.....khu.
old	.....sakus.
to place	.....cieu.
plant	.....sak.
prosperous	.....euru.
race	.....ili.
rain	.....muru.
river	.....aria.
sea	.....ab.
serpent	.....tsir.
servant	.....sun.
sheep	.....dara.
sick	.....tura.

## PERUVIAN.

rura, <i>Quichua</i> .
alljo, " loema, <i>Atacamena</i> .
açua, " "
paoki, <i>Aymara</i> .
aïke, <i>Atacamena</i> .
yaya, <i>Quichua</i> .
tata, <i>Aymara</i> .
cancha, <i>Quichua</i> .
aïcha, " <i>Aymara</i> .
kanu, <i>Aymara</i> .
challua, " <i>Quichua</i> .
nina, " "
humur, <i>Atacamena</i> .
chaqui, <i>Quichua</i> , <i>cuchi</i> , <i>Atacamena</i> .
pucara, <i>Quichua</i> .
uracque, <i>Aymara</i> .
tahuaco, " "
chu, " ku, <i>Quichua</i> .
apachie, <i>Quichua</i> .
chocque, <i>Aymara</i> .
khaya, <i>Atacamena</i> .
ïchu, <i>Quichua</i> .
ccari, <i>Atacamena</i> .
socco, <i>Quichua</i> .
musa, <i>Atacamena</i> .
suyi, " "
tausi, " "
echuja, <i>Sapibocono</i> .
abaracama, <i>Cayubaba</i> .
ampata, <i>Aymara</i> .
t'huri, <i>Atacamena</i> .
huasi, <i>Quichua</i> .
uta, ata, <i>Aymara</i> .
aliyani, " "
capac, <i>Quichua</i> .
chita, " "
kamay, " "
cacharini, " "
hucaro, " "
heka, <i>Aymara</i> .
orko, <i>Quichua</i> .
kkari, " <i>Aymara</i> .
jadsî, <i>Cayubaba</i> .
sune, <i>Yuracares</i> .
kosa, <i>Quichua</i> , <i>chacha</i> , <i>hake</i> , <i>Aymara</i> .
chaupi, <i>Quichua</i> .
ccara, <i>Aymara</i> .
achachi, " "
uscuna, " "
kuka, <i>Quichua</i> .
quaraj, " "
ayllo, <i>Aymara</i> .
para, <i>Quichua</i> .
habuiri, <i>Aymara</i> .
eubihure, <i>Sapibocono</i> .
katari, <i>Aymara</i> .
yana, " "
taruco, <i>Quichua</i> .
usuri, " "

	ACCAD.	PERUVIAN.
silver.....	babbar.	levir. <i>Atacamena</i> .
skin.....	sir.	ccara. <i>Quichua</i> .
spirit.....	alat.	llanta. "
star.....	ul.	sillo. <i>Aymara</i> .
stone.....	tak.	kak. " <i>Quichua</i> .
strike.....	takb.	taka. <i>Quichua</i> .
sun.....	utuci.	itoco. <i>Cayubaba</i> .
	lakh.	villea. <i>Aymara</i> .
tail.....	cun. izkun.	hinchinea. "
take.....	tab.	hapi. <i>Quichua</i> .
tongue.....	emi.	ine. <i>Cayubaba</i> .
tree.....	iz. gu. gis.	khoka. <i>Aymara</i> , <i>icheai</i> , <i>Atacamena</i> .
truth.....	zik.	cheka. "
white.....	uknu, sigunu.	haneo. haneona. <i>Aymara</i> .
wizard, enchanter.	as.	asuae. <i>Quichua</i> .
woman.....	rak.	rakka. "
	ni. nin.	anu. <i>Sapibocano</i> .
	sak.	ccachu. <i>Aymara</i> .
	turrak.	itorine. <i>Cayubaba</i> .
	khiratu.	cratalorane. "
young.....	sepuz.	sebebonto, <i>Yuracares</i> .

In the Peruvian portion of the above vocabulary we have presented the same phenomenon that the Accad language presents, a union of Khitan and Sumerian elements. Some of the Sumerian elements have already appeared in the comparison of the *Aymara* with the Celtic (Cymric) and Berber (*Zimuhr*, *Amor*, *Gomera*). It now remains to determine the Hittite or Khita element which finds its chief representation in the *Quichua*, although by no means unmixed with the Sumerian. Indeed so complete and far reaching seems to have been the union between Sumerians and Hittites, that it is questionable if any pure language of either class can be found, or any indeed, of the one that has not been largely influenced or affected by the other. My reasons, however, for regarding the *Quichua* as Khita or Khupuskian-Khita are those on the ground of which I have already proposed to recognize the languages and peoples of this class, namely, the preservation in the *Quichua* or Inca nomenclature of the distinctively Khupuskian-Khita names. As analogous to the words *Hubisega*, *Basque*, *Pkhah*, we find, first of all, the *Quichua* god, *Apachic* or *Pachacamac*, the form of whose name is better illustrated in the *Muysca* mythology, where the same solar deity appears as *Pesca* or *Bochica*. *Apachic*, *Pesca* or *Bochica* is the Accadian *Hubsisega* and the Circassian *Pkhah*. In the legendary history of *Montesinos* and others the same name meets us as *Pishua* and *Pachacuti*, famous sovereigns of the ancient Inca line; and geographical terms recalling *Biscay*,

Abasech and Thapsacus are Pasco, Pisco, Posco and Tapacoeche, all denoting places of importance. Ashtar again and the Basque Haitor are represented in the name of another legendary monarch and hero, Ayatarco, concerning whose reign a remarkable story is told that recalls the Bible narrative of Sodom and Gomorrah, "Giants having entered Peru, they populated Huaytara and other towns, and built a sumptuous temple in Pachacamac, using instruments of iron. As they were given up to sodomy, divine wrath annihilated them with a rain of fire, although a part of them were enabled to escape by going to Cuzco. Aytarcó-Cupo went out to meet them, and dispersed them about Limatambo." Finally Euskara, Iscuria and Achaicarus find their analogue in a famous Peruvian name which the present war with Chili has brought to the knowledge of every newspaper reader, as that of the best war-vessel of the Peruvians. Huascar is the name given by Montesinos to the immediate successor of Ayatarco and to subsequent occupants of the throne of the Incas, and it appears also in the annals of Garcillasso. I hold that Huascar, Ayatarco and Apachic are the Peruvian equivalents of the Circassian Achaicarus and the Basque Euskara, of the Hittite Ashtar and the Basque Haitor, of the Accad Hubisega and the Circassian Pkhah. Just as, in ancient Chaldea, Sumerians and Accad worshippers of Hubisega dwelt side by side, as, in Spain, Cymri and Basques once bordered on each other, and as, in Kitaya, Cambodian Khmer and Karien Passuko are found; so, in Peru, Aymaras and Quichua worshippers of Apachic divided the land. The Institutes of Menu make mention of this ancient Turanian family, perhaps at the time that the Karien Passuko were fighting their way southward to their Burmese home. In that old Sanscrit record they are the Pisachas, and belong to the great race of the Asuras, the Sanscrit equivalent doubtless of Euskara and Huascar.

I may now refer to my former paper, in which I demonstrated that the Peruvians, far from being an isolated American family, are of the same stock as the Muyscas of New Granada, the Cherokee-Choctaws, Iroquois and Dacotahs of this northern continent, and the Japanese, Koriaks and other Peninsular tribes of north-eastern Asia. In that paper I set forth the mythological names Pesca or Bochica of the Muyscas, Efeekeesa of the Muskogees, a branch of the Choctaw family, and Jebisu of the Japanese, as denoting the same solar divinity, and to these I now

add, with the Peruvian Apachic, the Circassian Pkhah and the Accadian Hubisega.\* Among the Dacotahs, the Mandans called themselves Seepshoksh, and this is the Circassian Schapsuch, the Accad Khupuskai, and the Basque Guipuzcoa. The name Euskara also appears among the Iroquois as the Huron god Tawiscara, and the title of a well known tribe, the Tuscaroras. I do not claim all the American and Asiatic peoples thus associated with the Peruvians as Khupuskian, but would rather find in them, together with the actual bearers of the Khupuskian name, members of the same great Turanian family which Dr. Hyde Clarke calls Khita and which the ancient Indians called Asura, names that are probably co-extensive and equally applicable to the non-Sumerian representatives of the Accad stock. The following table exhibits the Khupuskian (Basque and Circassian) relations of the Peruvian languages, relations which are more plainly visible when the intermediate members of the Khita family, the Peninsular tongues of Asia and the allied languages of North and South America are taken into the comparison.

	PERUVIAN.	BASQUE.	CIRCASSIAN.
above.....	anaepi, <i>Quichua</i> .	.....	ahpsey.
air.....	huayra, "	airea.	
all.....	taque, <i>Aymara</i> .	gucia.	eezabk.
arrow.....	huachi, <i>Q</i> .	guezd.	
	micchi, <i>A</i> .	.....	bzey.
axe.....	ayri, <i>Q</i> .	haizeora.	
bad.....	micha, <i>A</i> .	.....	bzaghey.
	chata, "	gaiztoa.	
beard.....	socco, <i>Q</i> . (hair)	.....	shagha.
beast.....	llama "	.....	billim.
bed.....	uyu, <i>A</i> .	oya.	
behind.....	ucata, <i>A</i> .	ostean.	yeytahney.
below.....	mancaro, <i>A</i> .	beherra.	
	icheu, <i>Atacama</i> .	.....	ayshay.
bind.....	huata, <i>Q</i> .	lota.	
bird.....	chiroti, <i>A</i> .	choria.	
	ppisko, <i>Q</i> .	.....	bzoo.
birth.....	qa, <i>Q</i> .	jayo.	
black.....	coca, <i>A</i> .	.....	shoodzah.
blood.....	huila, "	odsla.	kleh, thleu.
bone.....	echaca, "	.....	kutsha.

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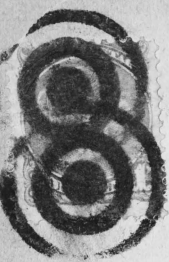
\* Pisca or Bochica of the Muyscas, Apachic of the Peruvians, and Eefeekeesa of the Muskogulges are represented as diluvian heroes or divinities. In Chaldea, Hasisadra or Xisuthrus was such. But in Ezechous, whom Africanus and Eusebius make the first Chaldean king after the flood, it is easy to recognize the Hubisega of the Accadians, while the Muskogulge Eefeekeesa and Peruvian Apachic almost perfectly reproduce the Greek form of the Hittite name handed down by the two fathers.

PERUVIAN.		BASQUE.	CIRCASSAIN.
boy .....	sima, <i>At.</i>	seme.	
	jocca, <i>A.</i>	.....	saghoo.
	churi, <i>Q.</i>	.....	kaala.
break .....	pakiy, " <i></i>	.....	seebeta.
breast .....	haiti, <i>At.</i>	titia.	
brother .....	panay, <i>Q.</i>	anaya.	
burn .....	raura, " <i></i>	erre.	
chain .....	huisca, <i>A.</i>	.....	psoh.
child .....	huarma, <i>Q.</i> ; churi, <i>Q.</i> (boy)	aurra.	tshahley.
clothes .....	acsu, <i>At.</i> ; isi, <i>A.</i>	jauci, jaunci.	shooghoon.
cloud .....	puhuyu, <i>Q.</i>	.....	washabshey.
cold .....	taya, <i>A.</i>	otza.	tsheeyetsha, tsheeyeh.
dark .....	amsa, <i>Quitena.</i>	.....	mezahshe.
day .....	chine, <i>Sapibococono.</i>	eguna.	atschinna.
death, die .....		il.	tlagha.
dog .....	anokara, <i>A.</i>	chacurra.	tkari, Mizjeji.
door .....		atea.	tshey.
drink .....	haitama, <i>At.</i>	edan.	
	aqua, <i>Q.</i>	.....	yeshwey.
eagle .....	paca, <i>A.</i>	.....	bzoo-oosh.
ear .....	paoki, <i>A.</i> ; uyari, <i>Q.</i> (hear)	bearria.	
earth .....	lacea, <i>A.</i> ; hoire, <i>At.</i>	lurra.	latte, Mizjeji.
	idatu, <i>Cayubaba.</i>	.....	yatta.
	pacha, <i>Q.</i>	.....	wahtey.
egg .....	runto, " <i></i>	arraultzia.	
	ecanti, <i>At.</i> , cauna, <i>A.</i>	.....	kanghey.
eye .....	nahui, <i>Q.</i>	.....	neh.
face .....	riceay, " <i></i>	aurpeguia.	
fall .....	urmani, " <i></i>	eror.	
father .....	tayta, " <i></i>	aita.	yati, taht.
field .....	vaca, <i>At.</i>	park.	bughodshee.
fight .....	huacta, <i>Q.</i>	guda.	
fire .....	cuati, <i>S.</i>	su.	zu Lesghian.
flesh .....		guelia.	glli.
forest .....	quenna, <i>A.</i> (tree).	oyana.	
		besoa.	pkhe (wood).
girl .....	ppacha, <i>A.</i> ; ussussiy, <i>Q.</i>	batsaya.	psahsey.
	sapana, <i>A.</i>	.....	sipshaz.
good .....	ccaya, <i>At.</i> ; asque, <i>A.</i>	egun.	souyyey.
great .....		andia.	atto.
grief .....	nanay, <i>Q.</i>	mina.	
hail .....	chijchi, <i>A.</i>	.....	skhakzee.
hair .....	chuccha, <i>Q.</i>	.....	shatzeh.
hand .....	suyi, <i>At.</i>	escua.	oyg, ey.
head .....	ppekei, <i>A.</i> ; abaracama <i>C.</i>	burua.	
	echuja, <i>S.</i>	.....	shkhah.
hot .....	capi, <i>At.</i>	beroa.	pahbey, fahbey.
house .....	ata <i>A.</i> , huasi, <i>Q.</i>	etchi.	hadsheeshish.
	puncu, <i>A.</i>	.....	wohney.
heavy .....		gacha.	zaaha.
iron .....	quella, <i>A.</i>	.....	shelits.
king .....	capac, <i>Q.</i>	jabea, nabusia.	pshee.
know .....	yatina, <i>A.</i>	jaquin.	zshagha, skhaner
lamb .....	una, <i>A.</i>	.....	heene.
		umerria.	melai.
leaf .....	cora, <i>A.</i>	orria.	kere, Lesghian.
learn .....	yachachi, <i>Q.</i>	ikasi.	ghassa.
life .....		bicia.	psagha.
lip .....	uirpa, <i>Q.</i>	.....	oobzey, okoofaree.



PERUVIAN.		BASQUE.	CIRCASSIAN.
man .....	kosa, <i>Q.</i>	guizua.	kodza.
milk .....	nana, <i>Q.</i>	eznea.	sheyzen.
moon .....	coyllor, <i>Q.</i> ; halar, <i>At.</i> (star)	illarguia.	
mother .....	mamay, <i>Q.</i>	ama.	
mountain .....	monono, <i>Yuracares.</i>	munoa.	
	moceo, <i>A.</i>	.....	meyzee.
mouth .....	khaipe, <i>At.</i>	aub.	
name .....	simi, <i>Q.</i>	ieena.	
neck .....	.....	iduna.	eddee.
night .....	tuta, <i>G.</i>	.....	tsheyshee.
		gau.	kayshey.
nose .....	evi, <i>S.</i> ; sepe, <i>At.</i>	.....	pey.
old .....	tanta, <i>Q.</i>	adinandia.	
	achachi, <i>A.</i>	.....	zey.
pain .....	llaqui, <i>A.</i>	.....	yetlerkey.
pure .....	.....	chauba.	kahbzey.
rain .....	para, <i>Q.</i>	euria.	kare, <i>Mizjeji.</i>
red .....	lara, <i>At.</i>	gorria.	tleeshee.
rise .....	haka, <i>A.</i> (raise)	jaiki.	
river .....	maya, <i>Q.</i>	ibaya.	pse.
road .....	peter, <i>At.</i>	bidea.	
salt .....	cachi, <i>Q.</i>	gatsa.	zogho.
sea .....	icuri, <i>C.</i>	ichasoa.	shoo.
sheep .....	ccaura, <i>A.</i>	achurria.	tzkwari, <i>Georgian.</i>
sick .....	usuri, <i>Q.</i>	eria.	oozeeshel.
skin .....	ccati, <i>At.</i>	.....	sheh.
sleep .....	atasei, <i>Y.</i>	.....	tsheeyah.
small .....	huchhuy, <i>Q.</i>	chiquia, <i>guchi.</i>	tzick, <i>tzook.</i>
snow .....	sairi, <i>At.</i> (rain)	elurra.	azore.
speak .....	rima, <i>Q.</i> , arusina, <i>A.</i>	erran.	
		edas.	zeeghadshas.
star .....	huarahuara, <i>A.</i>	izarra.	
stone .....	caichi, <i>At.</i>	acha.	
sun .....	villea, <i>A.</i>	iluzki.	malch, <i>Mizjeji.</i>
	itoco, <i>C.</i>	iguzki.	teygha.
tail .....	chupa, <i>Q.</i>	opa.	
throat .....	etippi, <i>S.</i>	gubioa.	
	comala, <i>At.</i>	samea.	zeymer.
tongue .....	ine, <i>C.</i> ; eana, <i>S.</i>	mia, <i>mina.</i>	ena, <i>Georgian.</i>
tooth .....	quene, <i>At.</i>	hagin.	
	kiru, <i>Q.</i>	hortz.	kertchi, <i>Lesghian</i>
tree .....	.....	arecha.	frah.
trunk .....	capintin, <i>Q.</i>	zepois.	
truth .....	checa, <i>A.</i>	egui.	sookahded.
water .....	puri, <i>At.</i> ; hahuiri, <i>A.</i> (river)	ur.	
	eubi, <i>S.</i>	.....	psee.
white .....	yurac, <i>Q.</i>	churia.	
	tara, <i>At.</i>	zuria.	
wing .....	checca, <i>A.</i>	egoa.	
wolf .....	atoc, <i>Q.</i> (fox)	otsoa.	
woman .....	ccachu, <i>A.</i>		sus, sheez.
wood .....	kullu, <i>Q.</i>	egurra.	kalki, <i>Lesghian</i> ; frah (tree)
year .....	huata, <i>Q.</i>	urte.	





PRIMITIVE ARTS  
AND  
MODES OF LIFE

By H. R. HOWLAND.

READ BEFORE THE BUFFALO SOCIETY OF NATURAL SCIENCES,  
MARCH 15, 1879.

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# PRIMITIVE ARTS AND MODES OF LIFE.

*Read before the Buffalo Society of Natural Sciences,  
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It is credibly asserted that with nine-tenths of the human race, man's material life, from the cradle to the grave, is but a struggle for subsistence—a prolonged and hard-fought battle for that bread without which life would end. So has it been from the beginning. Man's first necessities have been material, and have everywhere been the same; the imperious demands of Nature have compelled him to seek food, and if there has been a time when man's control over food was no greater than that of other animals placed with him upon the earth, he has demonstrated his gift of supremacy by the success with which little by little he has multiplied his sources of supply and increased its abundance and variety. It is in this severe school that those arts of life have arisen, of which our civilization in its material aspects is but the higher development. Their earliest germs were very rude and simple; but the endowment of mind bestowed upon man by his Creator has enabled him by slow but logical processes to work out their advancement, and human experience in the development of these early suggestions seems to have moved in essentially parallel courses, and in the main to have been identical the world over. Here and there the rapidity of growth has been modified by natural causes; circumstances of environment or of isolation have perchance arrested it, but none the less clearly may we trace, step by step, the progress of these primitive arts, modified and perfected with each advancing age, till we see the primal conception still reflected in the arts of civilization, as known to us in this 19th century.



Instances are not wanting, it is true, of retrogression. History tells us of branches of the human family who have dropped from a more advanced civilization to lower ranges of culture, but the higher culture must first have been gained. With every age of the world knowledge has increased, and, as a natural sequence, has wrought the amelioration of humanity, and, to quote the words of Professor Nillson, "We may be assured that the degree of civilization which a nation has once reached can never perish, but diffuses itself among others, and becomes the property of mankind in general, although its first organs have decayed. It is seed sown in another and richer soil, since the first no longer brings forth sound and good fruit. Nations spring into existence, and in their turn decline and fall; but civilization and humanity are steadily progressing, spreading themselves more and more, and will one day be disseminated over every spot inhabited by man."

Our search for the traces of man's growth in the arts and customs of life will lead us backward through the pages of recorded history to their first beginnings, and backward still through the dim and doubtful light of tradition to a time when even this fails us, yet the testimony ends not there; for scattered over the broad face of the earth are found traces of his earlier occupancy; and wherever he has in primitive days established his home—whether in the caves of the rocks, on the cold beaches of the northern seas, or the fertile plains and river courses of more genial climes—there has he left, in potsherds or flint-flakes, in rude shell-heaps, or more stately burial mounds, the evidences of his condition, to tell us how little or how great had been his progress towards civilization. Here it is that archæology takes up the search, and from these relics long hidden in the sheltering bosom of the earth tells us the story of pre-historic man. By it his undesigned chroniclings are revealed, and if we avail ourselves of the comparative methods familiar to schools of natural science, and examine these remains of long forgotten peoples in the light of the knowledge we possess of existing races in similar stages of development, we shall find the material ample to teach us what were the more primitive conditions of life, and what the steps by which man has reached the knowledge of better things.

It is but a few years since pre-historic archæology took its place as a science, and the early traces of man have thus far been more diligently sought for and more carefully scanned in Europe than in any other part of the world. It is within our own generation that the shell-mounds which may be seen scattered along the coast of Denmark, and which had long been considered simply as natural formations, were more carefully examined by Danish archæologists, who found among the shells rude implements of flint, stone axes, fragments of pottery, bones bearing the marks of stone knives, and raised hearths of stone showing traces of fire, demonstrating that on these sites were once the homes of an ancient race of fishermen and hunters, who cast aside their refuse till it accumulated in these deposits which are sometimes of considerable extent. Many of these Kjökken-möddings — for so they are called, the name meaning a “refuse heap” — have been opened, and the collections which have been made of the relics found throw much light on the primitive customs of the simple migratory people who in very early days inhabited these Scandinavian shores.

So long ago as the year 1828, evidences of human occupancy had been found in caves in the South of France, and a few years later researches in Belgium led to the discovery of human bones in caves, and with them rude implements of flint, and the bones of such animals as the Mammoth, the Cave Bear and others, which had become extinct in Europe at a time antedating historic record. This very singular disclosure, exciting great surprise and some incredulity, stimulated research in this direction, and the exploration of caverns in various parts of Europe, but especially in England and France, has shown that within the human period important changes have taken place in the physical condition of the country and in its climate, and that at the early date indicated by the presence of these bones of extinct animal species, these caves were the homes of men whose arts of life were of a very primitive order.

A French archæologist was the first to direct attention to the discovery of rude stone implements of human manufacture in the drift beds of the valley of the Somme, and to claim for them a seemingly incredible antiquity, and, while speculation was still rife over these discoveries, a singular circum-

stance occurred to bring to the light of day human remains, of a later time indeed, but of the greatest interest, as revealing the fact that the beautiful Swiss valleys had once been the homes of a pre-historic folk.

In the winter of 1853, the water level of the Lake of Zurich was so much lowered by reason of the unwontedly cold and dry season, that in the vicinity of Ober-Meilen the opportunity was improved to reclaim a portion of the lake-bed and raise its level by mud-dredging. This process brought to light many implements of bone and stone, as well as fragments of wooden piles which had once served to support some superstructure. Further investigation showed that over the waters of the Swiss lakes had, in early days, been built the habitations of a numerous people farther advanced in the arts than the inhabitants of the Danish shell-mounds; acquainted with weaving, and even somewhat skilled in agriculture and the domestication of animals. Evidences were not lacking to show that some of these lake villages represented a later and more advanced period than others; the entire series apparently marking many centuries of successive populations, and the material here furnished has been of the greatest value to the student of pre-historic archæology.

I have singled out these instances simply to show in what manner this science has developed, and to indicate some of the sources from the study of which we gain a knowledge of man in his earlier conditions; workers in this field have labored and still labor faithfully, and there is scarce a portion of the earth's surface where traces have not been found of the primitive arts of our race.

European archæologists have marked off the history of the human race into three successive ages—the Age of Stone, the Age of Bronze, and the Age of Iron—basing their arguments for so doing upon the fact that, in very many of the early habitats of man, no implements are found but those of stone, while in others, in addition to the stone implements, those of bronze are discovered, and in others of a still later day the stone and bronze weapons and tools are further supplemented by the addition of instruments of iron. This seems a purely arbitrary division, and here is much doubt whether the development in the knowledge

of metallurgy which it implies so clearly marks the successive stages in the growth of mankind as would be shown by the development in the arts of subsistence, were we to accept these as our guide marks. On our own continent there has been no distinctive Age of Bronze, though the Peruvians, it is true, appear to have had some slight knowledge of a somewhat similar composition. The Iron Age has had no counterpart here; for, though the Mexicans, the Peruvians and the nations of Central America had advanced far towards civilization, and though we find in the mounds of the Mississippi Valley evidence of a nearly corresponding growth, the knowledge of iron and its uses was unknown till the advent of the first European discoverers. Our savage tribes were in a purely stone age when America was discovered, and so far are the divisions of the European savants correct, that an Age of Stone seems to have prevailed the world over, and to mark a period in the history of the human race which has been termed its childhood, and which has naturally been of far greater duration than any of the more enlightened ages which have succeeded it.

There seems to be much diversity of opinion as to where the earliest traces of men are to be found. Sir Chas. Lyell inclined to the belief that man's first home was in the tropical climates, from whence the race was slowly dispersed over other regions; while Sir John Lubbock and the later school of European archaeologists, arguing from the discovery of rude stone implements in the glacial moraines and drift, claim that these are the first evidences of man's occupancy of the earth. Be this as it may, the witnesses to man's growth tell everywhere the same story: whether in the glacial drift, or the caves of France and England, in the tropical fields of India, the temperate regions of the American continent, or the far-off islands of the sunny seas; wherever, in short, are found the earlier works of human hands, they tell us of a time of rude beginnings, when man was content with arts of such simplicity that we can conceive no greater tribute to the mental powers bestowed upon him by his Creator than that, by their exercise, he has been enabled to advance himself to the condition of enlightened civilization in which he lives to-day.

Early man in his most primitive condition would seem to have been, as Plutarch said of races in his day, "living without fire,

houseless, hearthless, and dwelling in the open air." Though omniverous in structure, but ignorant as yet of the arts of fishing and hunting, his subsistence was found in the natural fruits of the earth, and, a little later, in the edible roots which he discovered in the soil, though at the time he had no thought for their cultivation. He was naked without sense of shame; for, being ignorant of the chase, the skins of animals had not become available for clothing, and the invention of the arts of spinning and weaving by hand was far, very far off in the dim future.

These early conditions of human life have their parallel among savage tribes at the present day. Mr. Dalton describes a race of wild men in the interior of Borneo, who live absolutely in a state of nature; who neither cultivate the ground, nor live in huts; who eat neither rice nor salt; who rove about the woods and at night sleep under some large tree, the branches of which hang low. They cover themselves with a piece of bark, and in this they also wrap their children; it is soft and warm, but will not keep out the rain. The people of Van Dieman's Land, according to Captain Cook, had "no clothes, no canoes, no instrument to catch large fish, no nets, no hooks; they lived on mussels, cockles, and periwinkles, and their only weapon was a straight pole sharpened at one end." The Digger Indians of North America subsisting upon roots and insects, sometimes allaying hunger with moistened clay, mark a low state, even of savagery, and a curious example of an undeveloped condition seems to be that of certain Australian tribes (described by Mr. Forrest in the *Journal of the Anthropological Institute* for January, 1876), among whom "paint and grease are their only garments, notwithstanding that they suffer much from cold, and have plenty of skins which they might wear."

We learn from Dr. Kane and others, that certain Esquimaux tribes of the far Arctic regions have no means of killing the reindeer, although it is abundantly found in their vicinity, and the even more singular fact that they have not yet learned the art of fishing.

In tropical climates, where Nature is lavish of her gifts, man might continue long in the condition that has been indicated without being driven by necessity to seek other than natural subsistence, and his simple wants being thus easily supplied, he

would naturally remain stationary and unprogressive, but as he migrated into more temperate regions, and was thus brought into contact with changed conditions of climate, a time came when Nature's supplies became less abundant, and man, at first driven by need, became a hunter, and soon developed resources of cunning to capture his prey; for creatures which, like those sometimes found on uninhabited islands, were at first unsuspecting and easily captured, gradually grew more wary, and, in their pursuit, man was first compelled to employ force in order to procure food. In the rude nodule of flint or other hard stone, picked up in the river-bed or from the gravel, he found at once the hammer and the missile, which would appear to have been his earliest implement and weapon. The branch broken from the tree furnished him a simple club, and, at a little later day, combined with the stone, became a development of the hammer, which seems to have been common to the whole human race. Soon, however, he discovered that certain of these nodules could be chipped off by well directed blows from other stones, and that, by being thus rudely pointed or sharpened, they could be rendered much more effective as weapons, and could also be used to cut the carcasses of creatures that had been killed.

Thus, the earliest stone implements that are found, in the gravel-beds or the lowest strata of the cave-deposits, are of this simple character—rough stones, coarsely pointed, but evidently knives, if we may so call them, or implements to be held in the hand, and used for cutting purposes. So rude are they, that it seems probable that other unworked stones were used as hammers with which to pound these knives when cutting into the body of any animal of considerable size. The next step seems to have been the development of these rude knives into pointed spears, which, fastened in hafts of wood or reed, supplanted the pointed poles in earlier use, and seem, for a very long period, to have been man's most formidable weapon of offense.

The art of fishing must have been first learned by man at a very early day, and while yet the spear and the club were his principal weapons; yet, when acquired, it was of great importance, as it furnished him an abundant supply of food, readily attainable, and by no means so precarious as the hunt for game; a supply, moreover, so generally and evenly distributed, that,



depending upon it with security as a means of subsistence, he was able to extend his migrations widely, and, following the river courses and the shores of the sea, to establish his domain unrestrained by limitations of place or clime.

Man, having learned to eat the flesh of animals and of fish, must have been early acquainted with fire, as without this he could have no means of cooking his food; and, though the Esquimaux and, it is also said, the Fuegians of the present day eat their meat and fish raw, yet these are instances confined to latitudes of extreme cold, and our own Arctic explorers have sometimes adopted the same course, as being in such climates desirable and consistent with health.

There is no well authenticated instance recorded of any savage tribes being ignorant of fire and its uses, though statements have been made to that effect; Father Gobier asserting, in his history of the Ladrone Islanders, that fire was utterly unknown to them till Magellan, provoked by their repeated thefts, burned one of their villages; and Commodore Wilkes relates that on the island of Fakaafo "there were no signs of places for cooking, nor any appearance of fire, and the natives were much alarmed when they saw sparks struck from flint and steel;" but, though these statements are regarded as questionable, it is a singular fact that some of the northern and western tribes of Australia had no means themselves of re-lighting their fires, but if all the fires in an encampment became extinguished, they would procure a fresh supply from some neighboring tribe; while in damp weather others carried with them a lighted cone of banksia, which burns slowly and affords them the means of re-kindling an extinguished flame.

Although fire was known to the Tasmanians, some of the tribes were ignorant as to whence it was obtained, or how it could be re-produced if once put out, and, "in all their wanderings they were particularly careful to bear in their hands the fire-brand, which was studiously refreshed from time to time as it became dull and evanescent."

How man first acquired a knowledge of the art of making fire is simply a subject of speculation, as almost every people possesses in its mythology some tradition akin to the Prome-thean fable. The most primitive method of producing fire of

which we have knowledge is that still employed by the natives of southern Australia, who rub two pieces of wood together over a tuft of dry grass and create a flame by the violent friction. This would seem to have been the method first invented by primitive man, to whom it was, perhaps, suggested by seeing the branches of a tree ignited by continued and violent chafing; he had, perhaps, before this had occasion to note its nature and effects in the lightning stroke or the scorching breath of the volcano, but in the manner suggested first learned how he might himself produce this heaven-sent gift.

The art once learned, man's progress in it was rapid; from the simple method already referred to he soon advanced to other and more artificial means. In the island of Sumatra we are told that two sharp-edged pieces of bamboo are rubbed across each other; while throughout the South Sea Islands a common method is that of rubbing a blunt-pointed stick along a groove made by itself in a piece of soft wood laid on the ground—a process by which, it is stated, a native would produce fire in a very few seconds. The fire-drill as described by Captain Cook in use among the savages of Australia, is apparently a development of the stick-and-groove process; he says, "They produce fire with great rapidity and spread it in a wonderful manner. They take two pieces of dry soft wood—one is a stick about eight or nine inches long, the other piece is flat; the stick they shape into an obtuse point at one end—and, pressing it upon the other, turn it nimbly by holding it between both their hands, shifting their hands up and down to increase the pressure as much as possible. By this method they get fire in less than two minutes, and from the smallest spark they increase it with great speed and dexterity."

The use of these fire-sticks and drills is widely spread among the ruder tribes of the earth; they are found among the Australians and the Tasmanians, the Malays, the Veddahs of Ceylon, the people of southern India, the Arabs and the tribes of Kamschatka, in southern and western Africa and throughout the extent of our continent from the regions of the Esquimaux to the Straits of Magellan. In rude sculptures

of the Mexicans we find their use long since recorded, and in the collections of our own society may be seen these same fire-sticks brought from the Pai-Utes of the West, who, in common with other tribes of North American Indians, still depend upon their use. It is curious to note that among nations who have long since reached a higher civilization, as, for example, the Chinese, tradition preserves the memory of a time when they produced fire in this primitive manner. Semitic records tell the same story, and the instrument used in India to-day for kindling sacrificial fires is doubtless the same as that used by our Aryan ancestors before their invasion of Europe.

When man had learned how to twist a cord of bark, or to make one of sinew or of hide, he found it much easier to work his fire-producing apparatus, by winding the thong around the drill and by pulling each end alternately to twirl it rapidly. Such was a common method among the Esquimaux, who, like the Aleutian Islanders, held one end of the drill firmly between the teeth; and such the cord drills already referred to as still in use among the Brahmins of India.

I have mentioned that in Sumatra the natives rub one sharp-edged piece of bamboo across another to kindle a flame. In doing this they probably discovered that by *striking* one of these pieces of silicious-coated cane against another they could strike fire, and we accordingly find this custom prevalent in eastern Asia, and to a considerable extent in the islands of Borneo and Sumatra. This and similar methods seem to mark a line of development in the art of fire-making, independent of that of wood friction already described. When first discovered, the Fuegians used lumps of iron pyrites and quartz, with which they struck sparks upon tinder made of well dried moss or grass. Certain of the Esquimaux tribes did the same. The early Jesuit missionaries reported that the Algonquin Indians used "two pieces of mineral" with which to strike fire, while the people of Alaska are said to have used two pieces of quartz rubbed with sulphur, which they struck together over dry moss and feathers.

Provided with simple but effective weapons for the procuring of food, and possessed of the art of producing fire wherewith to

prepare it, man, as a hunter and fisherman, enabled to move into areas possessing other kinds of food, and subjected to modifying external influences, might be expected to develop a rapid growth in the simpler arts, and as gradually intermixture took place, the wise bestowed, as well as learned, new wisdom, and primitive inventions multiplied.

As yet stone and wood were his only materials, though he soon learned that, in addition to these, the bones and horns of animals slain for food might be made available for many uses. His skill as a worker of stone increased as he discovered that by chipping off smaller pieces than he had done in fashioning his first rude spears, more effective shapes and better cutting edges could be obtained. This process of chipping he at first accomplished by blows, but after a time learned that it could be more satisfactorily done by pressure; gradually, too, he became more discriminating as to the kind of stone employed, and seems at times to have spent much labor in obtaining flint of a satisfactory quality; for this stone he found (from the mode of fracture) to be that best suited to his needs, and of it were fashioned by far the greater part of the implements and weapons of the Stone Age. Simple flakes of flint, sometimes of considerable length, thin and sharp edged were much in request as materials for spears, and were themselves very generally used as knives. One after another, to meet occasions of need, new implements were fashioned, till man had so provided for his wants, that, in examining the relics gathered from his early habitats, we find the prototypes of all the ordinary implements used by his civilized descendents.

Next to the spear, both in importance and in order of invention, came the stone axe, which was pre-eminently the universal implement of primitive times. These axes are everywhere found in great profusion, and are always essentially the same, differing only in type and degree of finish. The earliest ones are, like the earliest knives and spears, rudely shaped from rough pebbles by blows from hammer stones; gradually they improve in shape, are made less uncouth and clumsy, are brought to a better cutting edge, and, in still later days, we find that the rough surfaces were ground off on flat blocks of sandstone, not unfrequently producing a highly polished and effective implement.

This invention gave man a new weapon, and a formidable one,

for one of these rude hatchets inserted in the split end of a branch made a weapon of offense for use in the chase or in war which was not to be despised. Among certain tribes we find that sometimes several of these, of small size, were inserted together in the same haft, making one of the most murderous weapons of antiquity.

Its most important place however was in furthering the arts of peace. As an implement these axes were held in the hand, and man was by their use first enabled to fell trees and to learn by slow degrees the art of working in wood. To fell a tree was a task of no little difficulty and was accomplished by first bruising the bark with these hand-axes to soften the fibres and prepare them to be more easily burned by the fire which was then kindled around the trunk; little by little the charred portions were cut away till the tree at last yielded and fell prostrate. By a similar process our primitive woodman was able to cut off such lengths as he desired, and from these to fashion his rude canoes. It is probable that before this he had taken his first lessons in the art of navigation, his boat, a fallen tree on which he sat astride, his paddle, a piece of bark, or a broken branch in either hand, with which he guided his simple craft. In this connection, however, it is worthy of mention as a singular fact that the people of western Australia, who lived upon the shore and derived their food mainly from the sea, had no boats or rafts, and had never visited the islands close to the main land before the planting of the first English colonies; it is also said that other tribes near Sidney were unable to swim. The Patagonians, we learn, were destitute of canoes, and Capt. Ross states that the Esquimaux at the northern end of Baffin's Bay were entirely without canoes and were ignorant, even traditionally, of the existence of a boat. The people of southern Australia made primitive rafts of pieces of bark or mangrove stems which they fastened together with withes, while an example of development in this direction is found in the well-formed canoes of birch bark used by the North American Indians.

The invention of the axe was of great service to man as a navigator, for having charred the upper surface of a log he cut the coals away with his stone hatchet till he hollowed out the first canoe and gave to the world the ship-builder's first model.

As time passed by, these simple hand-axes furnished the suggestion for many useful implements for the carpenter's handicraft, and led to the invention of chisels and adzes, which, as well as skillfully wrought stone gouges, are found of all sizes and shapes, for use with and without handles.

Provided with these implements, man became proficient in the fashioning of canoes, wooden vessels, and utensils, and ultimately in the shaping of timbers and planks for house architecture. After he had learned to smooth the surfaces of his stone axes, he discovered that, exercising a little skill and great patience, he could, by the use of flint knives with sand and water, cut and polish a groove around the hammer-end of his hatchets, and, by twisting withes around this, could make a more secure fastening, a better handle, and, consequently, a more valuable instrument. Some of these grooved axes are beautiful examples of the skill attained by man as a worker of stone; but long centuries must have elapsed before he had acquired this later skill and knowledge.

As we have already seen, the earliest weapon seems to have been the stone spear, and, with scarce an exception, all the savage tribes of whom we have knowledge, were thus provided. Mankind, however, seems to have learned, at a very early day, the use of the sling, of which the simplest form was the stick, having a slot or hole in the upper end, in which the slingstone was placed, and from which it was hurled. Its use became very general, and was preserved long after the opening of the historic period, both among the Egyptians and the Semitic race; for it was with this simple weapon that David was provided, when, discarding his armor and his sword, he "took his *staff* in his hand, and chose him five smooth stones out of the brook," to the disdain of the champion of Gath, who said: "Am I a dog, that thou comest to me with *staves*!" We read, too, in the Book of Judges, of the inhabitants of Gibeah, that "among all this people there were seven hundred chosen men left-handed; every one could sling stones at a hair-breadth and not miss."

A much later form than this was the sling made of a ribbon-like strip of hide, in which the stone was hurled. Strabo tells us of the dexterity attained by the inhabitants of the Balearic Islands in the use of this weapon, this in fact giving the name



to the islands themselves, from the Greek verb, signifying "to throw." This sling was in common use among the Greeks and other nations of their day, in their wars with the Asiatic hordes.

A weapon similar in principle was the javelin or spear, thrown by means of a short stick with socket, held in the hand, by means of which great momentum was imparted to the missile.

By far the most important step of progress in the stone age, was the invention of the bow and arrow. The New Zealanders, when discovered, had no knowledge of this weapon, nor even of the sling, their only missile being the lance or spear, thrown by the hand. The Australians, throughout the whole continent, were also unacquainted with slings or bows, though they had the spear, the javelin, and a peculiar weapon, the boomerang. The invention of the bow and arrow came, perhaps, late in man's upward course, but the importance of its influence for his advancement can hardly be overestimated, as it furnished him his first reliable and deadly weapon for the chase as well as for war; in the first instance, giving him a control over the means of subsistence which he had not enjoyed before, and in the second, compelling the scattered bands or families of men to become confederated for purposes of war, thus bringing about a contact of differing peoples, the influence of which could not be obliterated, so that this great evil, direful in its origin and results as it has been, has still proved in one way a means of human progress, and the invention of this weapon marks a turning point in man's history; as great, perhaps, as does the later introduction of the sword, or the modern invention of fire-arms.

The elastic stick used to throw the javelin, or some such weapon as the elastic darts of the Pelu Islanders, "bent, and made to fly with their own spring," may have furnished the first suggestion of the bow, which was generally made of wood, though, in the case of certain American tribes, the horns of elks or mountain sheep were used, the string being of twisted sinew, used loose, and requiring a guard to protect the hand which held it.

The manufacture of his arrow-heads severely taxed man's ingenuity as a worker of flint, and, though the first types were simple, yet those which followed required the exercise of such dexterity as ultimately to lead to a division of labor, various tribes having their professional arrow-makers.

Their common methods are, perhaps, well illustrated by Catlin's description of arrow-making among the Apache Indians. He says: "Every tribe has its factory where these arrow-heads are made, and in those only certain adepts are allowed to make them for the use of the tribe. Erratic boulders of flint are collected (and sometimes brought an immense distance) and broken with a sort of sledge-hammer made of a rounded pebble of hornstone set in a twisted withe, holding the stone and forming a handle. The flint, at the indiscriminate blows of the sledge, is broken into a hundred pieces and such flakes selected as, from the angles of their fracture and thickness, will answer the basis of an arrow-head. The master-workman, seated on the ground, lays one of these flakes on the palm of his left hand, holding it firmly down with two or more fingers of the same hand, and with his right hand, between the thumb and two forefingers, places his chisel on the point that is to be broken off, and a co-operator, sitting in front of him with a mallet of very hard wood, strikes the chisel on the upper end, flaking the flint off on the under side, below each projecting point that is struck; the flint is then turned and chipped in the same manner from the opposite side, and so turned and chipped until the required shape and dimensions are obtained, all the fractures being made on the palm of the hand. The yielding elasticity of the palm of the hand enables the chip to come off without breaking the body of the flint, which would be the case if they were broken on a hard substance.

"These people have no metallic instruments to work with, and the instrument which they use, I was told, was a piece of bone; but, on examining it, I found it to be a substance much harder, made of the tooth of the sperm whale, which cetaceans are often stranded on the coast of the Pacific. This punch is about six or seven inches in length and one inch in diameter, with one rounded side and two plane sides, therefore presenting one acute and two obtuse angles to suit the points to be broken. This operation is very curious, both the holder and the striker singing, and the strokes of the mallet given exactly in time with the music, and with a sharp and rebounding blow, in which, the Indians tell us, is the great *medicine* (or mystery) of the operation."

Other tribes differ but slightly from this in their mode of working. The Aztecs broke off their flakes of obsidian for arrows

and knives by pressure instead of blows, and Sir Edward Belcher thus describes the usual method of the Esquimaux: "Selecting a log of wood in which a spoon-shaped cavity was cut, they placed the splinter to be worked over it, and by pressing gently along the margin vertically, first on one side, then the other, as one would set a saw, they splintered off alternate fragments, until the object thus properly outlined presented the spear or arrow-head form, with two cutting serrated sides.

The variety of types in these arrow-heads is very great: the plainer forms being simply triangular in shape, while others have stems which are sometimes notched to facilitate fastening them with threads of sinew to the hafts of reed; others still are barbed, so that the victim may not be able readily to disengage them from the flesh, while some have serrated or toothed edges, to produce a ragged and dangerous wound. These types, and scores of others, are copied as well in the spear-and-lance-heads found in the stone-age relics of both the new and the old world.

The variety of implements fashioned of flint increased even-paced with the growing wants of man; borers and awls are found in great profusion, chipped with wonderful delicacy and skill; saws for wood-and-bone-workers, scrapers and skin-dressers, long daggers to be grasped by the hand, ornaments, and a vast number of unnamed implements whose uses are purely conjectural. It is an interesting fact that in these flint tools we find the first evidence of man's economies; for we discover that implements which had become broken, instead of being cast aside, were often remodeled and in other shapes made to serve a purpose of usefulness.

Bone, horn and shell now assumed important places as useful materials, and man soon learned to employ them where it was not practicable to use stone; he found it, for example, very difficult to shape fish-hooks of flint, but by fastening a sharpened bone with sinew, to a wooden shaft at the proper angle, he produced the fish-hook still in use on our northwest coast. We learn from the *Odyssey* that fish-hooks made of the horns of the ox were still in use in Homer's time. The people of southern and western Australia and the Patagonians, when discovered, had no fish-hooks, depending, as probably all primitive people did in the outset, upon diving, and the use of their spears and darts; the

people of Tahiti, however, made fish-hooks of mother-of-pearl, using a piece of coral as the file with which they produced the desired shape. Fish spears were often made of pointed bone with barbs on the side, and were fastened to poles, and harpoons of bone, or sometimes of bone with sharp stone-tips, were, and still are, in frequent use among sea-coast tribes.

The sculptures on the early temples of India, representing the listeners to Buddha, give us evidence of the fact that in warm climates men may reach a condition of no little advancement in civilization without perceiving any necessity for clothing; so we need hardly feel surprise if we find this art still unthought of among ruder and more primitive peoples. The Andaman Islanders are said to cover themselves with mud, but they wear no clothing, and the Australians, as first observed by Capt. Cook and others, were ignorant of its use, though, as has already been mentioned, they often suffered from the cold, and had plenty of skins which they might wear. The inclemency of cold climates taught man generally to protect his body with the skins of animals; at first simply wrapped about him, but in later times fashioned into very primitive garments, when he had learned to make awls of horn or stone to pierce holes in the hides through which he might pass the needles of bone provided with threads of sinew, wherewith he first essayed the tailor's art.

Of the inhabitants of Tierra del Fuego, when first discovered, we learn that the men went altogether naked, and the women had only a bit of skin about the waist, though "among the central tribes the men generally possess an otter skin, or some small scrap about as large as a pocket handkerchief, which is barely sufficient to cover their backs as low down as their loins; it is laced across the breast by strings, and according as the wind blows it is shifted from side to side. Many, however, even of the women, go absolutely without clothes." The Hottentots were herdsmen, and had learned the manufacture of iron, but their clothing was simply a skin worn over the back and fastened in front, which they carried as long as they lived, and in which they were buried; besides this, their only garment was a square piece of skin tied around the waist by a string, and left to hang down in front, though it is added that they sometimes wear caps. The Patagonians make

their dresses of skins, sewing them together with ostrich sinews, and wear an apron around the waist. The Esquimaux display great skill in making with bone needles and sinew threads warm outer garments of seal and reindeer skins—wearing breeches, stockings and hooded great-coats, underneath which they also wear shirts usually made of bird-skins with the feathers turned inward—women and men being clothed alike.

Professor Wilson says, "The heritage of nakedness which no animal envies us is not more the memorial of the innocence that once was ours, than it is the omen of the labors which it compels us to undergo; with the intellects of angels, and the bodies of earth-worms, we have the power to conquer and the need to do it. Half of the industrial arts are the result of our being born without clothes, the other half, of our being born without tools."

The much worn fleshing tools and scrapers of stone abundantly plowed up in our fields bear ample testimony to man's first experiences as a skin-dresser, and in the smoke of the primitive hunter's tent or wigwam was first born the art of tanning leather, while the savage who fashioned from these smoke-tanned hides the first pair of simple sandals or moccasins was the father of the whole succeeding race of shoe-makers.

As time went on, the discovery was made that coverings for the body might be found in other materials than the skins of wild beasts, and from this discovery grew one of the most important of the industrial arts.

The inner bark of certain trees furnishes a soft material, not unlike a cloth, and this we find is now sometimes worn by uncivilized tribes. The Feejeeans still obtain from the paper-mulberry sashes of such material from six to ten yards in length with which they wrap their persons. In his endeavors to obtain and utilize similar fibrous material, man learned the arts of spinning and weaving.

From the bark of certain trees, and the leaves of others, he first twisted by hand, or by rolling the fibres with the palm of the hand upon the thigh, his coarse cordage, with which he made his earliest fishing lines and nets. Among the relics from the Swiss lakes, as well as from the mounds of the Mississippi Valley, are found, however, round stones perforated to receive a shaft, which

would seem to show the antiquity of the spindle; these being the whorls or weights, by means of which the spindles were made to turn and twist the thread, and the old women who may still be seen in the Scottish Isles spinning their flax with a spindle made of a bit of stick with a potato stuck on the end practice this art very much as it was practiced by the pre-historic folk of Europe and America.

The art of weaving these threads into cloth for garments seems to have been but slowly developed, and man apparently first learned to braid rushes and canes into baskets, which furnished the first convenient vessels of any size for preparing and transporting food—and in plaiting mats which served for purposes of shelter.

The step seems a very short and simple one from the art of making these mattings of grasses or canes to that of weaving twisted fibres together for clothing, but between the two there came a transition work illustrated by the custom of the Tahitians, who take strips of bark from the young fig-tree, and preparing them by scraping with a shell, and soaking in water, place them side by side and in several layers, and by beating them with a grooved instrument of wood cause them to adhere firmly together, by this means producing a soft cloth of almost any desired degree of fineness, and of such close texture as to admit of being washed and wrung out without tearing.

Among other tribes who do not seem to have learned the art of weaving, a cloth is made by laying bundles of untwisted fibre side by side, and tying them together with transverse bands. From the lake habitations of Switzerland have been taken fragments of cloth made in precisely the same manner, as well as others in which both warp and woof are made of twisted strands, while later still, as shown by further specimens, they seem to have learned the art of plain weaving.

This was first done by the hands alone and with no little effort of patient labor; but the earliest suggestion of the loom frame seems to have been the use of two stakes, such as were employed by the Louisiana Indians, who planted them in the ground about four feet apart, and stretching a cord from one to the other, fastened to it double threads of bark with which other threads were interwoven to make the material for their blankets. Adair



says of others of the Indian tribes, that they take the wild hemp and "when it is fit for use they pull, steep, peel and beat it, and the old women spin it off the distaffs with wooden machines (or spindles), having some clay on the middle of them to hasten the motion; when the coarse thread is prepared, they put it into a frame about six feet square, and instead of a shuttle they thrust through the thread with a long cane, having a large string through the web which they shift at every second course of the thread." The same author states that another tribe, the Muscogeese, had learned the use of the shuttle, having, as he says, "a couple of threddles, which they move with the hand so as to enable them to make good dispatch, something after our manner of weaving."

Before man had reached this somewhat advanced condition of the art, he had learned to spin his threads of other materials than vegetable fibre. In the western mounds we have found woven fabrics of rabbits' hair; the use of dogs' wool was common among the New Zealanders and the people of our more northern coasts, while many of our Indian tribes used buffalo hair, and with great ingenuity wove showy garments of cords made by twisting bark fibre with wild turkey feathers.

The inhabitants of the eastern hemisphere had all the animals, save one, which might be domesticated, and as they learned to subject these to their wills, they were enabled to add their milk and flesh to their means of subsistence. This great step made them independent of the chase and enabled them to leave the forests, and establishing themselves in the open plains—such as the steppes of Asia and the plains of India and the Euphrates—to become herdsmen and adopt the pastoral life.

The condition of man was thus greatly ameliorated, and his children, abundantly provided with milk and supplies of animal food, grew up to become a more healthful and vigorous race of men; a fact, it is claimed, to which the Aryan and Semitic families (who adopted to the largest extent this mode of life) may perhaps owe their pre-eminent endowments.

In Europe, the lake dwellers alone among the pre-historic people appear to have had domestic animals, as bones of the ox, the sheep, the goat, the horse, the pig, and the dog, are found among their relics, and show, as do their bronze implements, that

their day was a late one, impinging very closely upon the historic epoch.

It is curious to note in passing how singular are some of the uses to which man has put domesticated animals. It seems strange to think that the peaceful ox could ever have been trained to serve in war, yet such we are told is the case, and Pliny tells us that troops of dogs were so used in early times.

We must look very far back into the past if we would find the time when man led a "dogless life;" this faithful creature was his first companion, and his adaptability has led to his employment by savage tribes in many varied ways. In the South Sea Islands he was bred for food; the Esquimaux made him a beast of burden; others kept him for his wool, and the Fuegians train him to catch sleeping birds, and very ingeniously to aid them in their fishing. Two men enter the water, holding a net, "when the dogs taking a large compass dive after the fish, and drive them into the net, enjoying it much, and expressing their eagerness by barking every time they raise their heads above the water to breathe." I might add that the use of the dog as a shepherd must have begun when man first adopted the pastoral life on the plains of Central Asia.

As a probable result of this pastoral life, on the Eastern Hemisphere at least, sprang up the art of agriculture. There the needs of his flocks may have taught man to provide, by cultivation, the supplies of food, without which he could not have taken his herds away from their grassy plains, and penetrated, as did the Aryan race, the forest regions of Western Asia and Europe, and, as he became settled in more permanent habitats, experience taught him forethought and the prudence of saving, and he learned to provide, by cultivating the fruits of the soil, for his own wants, as he had for those of his sheep and kine.

In our own Aryan family we have lingual evidence that agriculture followed the domestication of animals; for, while there are in the various Aryan dialects common names for these animals, there are none for cultivated plants and cereals.

In the Western Hemisphere we trace, however, an independent growth of agriculture; for on this continent, with the exception, perhaps, of the llama in South America, there was an absence of the animals suited to domestication. Yet we find

that agriculture had so developed in the cultivation of the maize as to become among many tribes the most important means of subsistence.

This single cereal, unknown to the old world, as were most of its grains to the new, from its very nutritive qualities, the ease with which it could be cultivated and the abundance of its returns for man's labor, provided a means of advancement to the American aborigines which more than compensated for the absence of flocks and herds, and the agricultural art was more fully developed here during a purely stone age than it was in the old world at a much later period.

We accordingly find in the alluvial valleys of the west, where were planted the villages of the Mound Builders, stone spades skillfully shaped and sometimes two feet in length, which were held in the hand in digging, their highly polished surfaces giving evidences of long continued use. Here, too, we find stone hoes shaped almost precisely like the iron hoe of to-day, and notched to provide a means of fastening them to handles. Round discs of chert six inches in diameter were inserted into the split ends of poles and used as cultivators with which to turn up the soil around the growing shoots of corn.

None of these tools are found in the old world, and there the agricultural implements were doubtless sticks of wood, such, perhaps, as are still used by the Feejeeans; these are described as being made of young mangrove trees "about the size of an ordinary hay-fork, the lower end being tapered off on one side after the shape of a tooth-pick, the flattened side being kept downwards in digging. When preparing a piece of ground for yams a number of men are employed, divided into groups of three or four; each man being furnished with a digging stick, they drive them into the ground so as to enclose a circle of about two feet in diameter, when by repeated strokes the sticks reach the depth of 18 inches, they are used as levers, and the mass of soil between them is thus loosened and raised, the clods are then broken up by boys with short sticks."

Among the Maories the only instrument for tillage was "a long narrow stake sharpened to an edge at one end, with a short piece fastened transversely at a little distance above it, for the convenience of pressing it down with the foot," and we learn of the

Tahitians that they had "instruments of hard wood about five feet long, narrow, with sharp edges and pointed," which they used as spades and hoes.

For hoe-blades the Feejeeans use a plate of tortoise shell, or the valve of a large oyster, and among the North American Indians the shoulder-blade of the bison was fastened to a handle to serve the same purpose.

In America the raising of the maize was supplemented in a limited way with the cultivation of beans, the squash, melons and tobacco, and in the old world, with the exception of tobacco, these and other plants were added to the more important grains, such as wheat, rye, oats, millet and barley.

The people of the Kjökken-Möddings, like the Fuegians and other existing savage tribes, were ignorant of this art; but that it had been learned by the earliest of the lake-dwellers is shown by the singular discovery of carbonized wheat, barley and millet among the *débris* of the Swiss lakes, and even more wonderful than the finding of the burned loaves in Pompeian ovens, is the discovery, in this same *débris*, of wheaten cakes preserved by carbonization to tell us in what way this vanished and long-forgotten people prepared their bread. They were a provident race; for stores of grain are found, roasted, coarsely ground, and packed away in earthen jars; and the fruit-preserving arts of to-day had their first beginnings among this simple folk, whose relics show quantities of carbonized apples, halved and quartered, which had evidently been dried and put aside for use in the long Swiss winters.

On the western continent the use of farinaceous food, and the consequent practice of the agricultural arts, led men to localize and establish themselves in villages, for, by the abundance of food thus provided, the subsistence of large populations in limited areas now first became possible, and, though the pastoral life may still have long prevailed in the old world, the influence of agriculture must have been of great importance in establishing men in fixed abiding places.

Man, as an agriculturist, first tilled patches of open land, but, as other agriculturists settled about him, each appropriating the territory he required, landmarks were first set up, fields enclosed for cultivation, rights of possession defined, and man became a

land-owner, affixing to his boundaries some mark of distinction, such as in nomadic days he had used to brand his cattle or his tents, thus unconsciously establishing the first beginnings of a written language.

One of the most important of the household arts was that of making pottery, the first discovery of which seems to have been in some degree associated with village life, though it must not be supposed that this invention was necessarily subsequent to that of the arts of cloth-weaving or of agriculture; for the rude people of the Danish shell-mounds, though ignorant of both these arts, knew how to fashion and to bake vessels of clay—a knowledge not possessed by many savage tribes within the historic period.

Nature furnished the first cups and water-bottles in the gourds and cocoa shells, such as were used, for example, by the Maories and Tahitians, though, in the case of the latter people, art had so far supplemented the generosity of nature as to have provided large dishes of polished wood.

The Andaman Islanders used sea-shells and hollow sticks of bamboo to hold water. The Fuegians and Australians, who were also ignorant of pottery, used vessels made of bark. The Patagonians and Hottentots made use of bladders and leathern sacks, though the latter people also used water-tight rush baskets in which to keep milk and food.

A curious vessel was the pot described by Wyeth as made by the Shoshone Indians, of “long, tough roots, wound in plies around a centre, shortening the circumference of the outer plies so as to form a water-tight vessel in the shape of an inverted bee-hive,” and I might add that bottles of corn-husks, and water-jars of braided rushes daubed with mineral pitch are still not unfrequently used by Indian tribes, who have learned besides to fashion vessels of terra-cotta.

We obtain an idea of the first suggestions of the ceramic art from the custom of some of the Esquimaux tribes, who cook their food in a hollow in the ground, which they line with clay, or in gourds and wooden vessels coated with clay that they may withstand heat; others taking flat stones raise upon them rims of clay, from which it would seem an easy step to make the bottom also of the same material, and thus to construct the first dish of terra-cotta.

That having once been learned its usefulness should soon make this one of the most wide-spread of the arts is most natural, and over the broad face of both hemispheres are profusely scattered the potsherds which testify to the industry of these forerunners of Wedgewood and Copeland.

Rude urns and vessels of clay are found in the Kjökken-Möddings and the Lake dwellings, and those of a latter fabrication are very abundant.

On our own continent among the Peruvians the art reached a great degree of perfection, and from the mounds of the West are taken specimens of pottery, in some cases coarse and unsymmetrical, but in others carefully wrought and of superior finish; evincing extraordinary skill in the manufacture of fictile wares by a people ignorant of the potter's wheel. All these vessels seem to have been fashioned by hand, with no other assistance, perhaps, than that given by "a stick of wood grasped in the hand by the middle and turned round inside a wall of clay formed by the other hand or by another workman."

Here the art of braiding baskets of willows or splints had been apparently first learned; for some of the vessels appear to have been formed by lining the inside of such baskets with clay, and afterwards burning off the wicker covering in baking the clay pot.

Reversing the process, they moulded many of their vessels over gourds, and other models, to give them desired shapes. Their ornamentation, which was at first simple, consisting of indentations in the clay, made with the finger-nail or with some pointed instrument, or perchance the groove left by drawing a cord tightly about the rim, gradually became more elaborate, and an interesting paper might be prepared on the development of certain of these decorative combinations of straight lines and curves, which have been of world-wide adoption, and which are still in common use; but, in addition to the decoration of plainly-shaped vessels by indented markings, and the use of bright-colored clays, these early potters boldly essayed the moulding of their plastic materials into grotesque shapes of men and animals, achieving, in some instances, a success truly remarkable. This is a feature, however, peculiar to the pottery of our continent; for, as



has been stated by a distinguished authority regarding the pottery of the Stone Age in Europe, "in no single case is any attempt made to imitate leaf or flower, bird, beast, or any simple, natural object; and when in the bronze-work of the later iron period, imitative forms at length appear, they are chiefly the snake and dragon shapes and patterns, borrowed, seemingly, by Celtic and Teutonic wanderers, with the wild fancies of their mythology, from the far eastern cradle-land of their birth."

Experience soon taught men how to temper their clay with calcined shells, mica, quartz, or sand, so as better to resist the action of fire, but there is no evidence of glazing found on these early wares, which were generally baked in an open fire, though some, from the process, or from some subsequent exposure to great heat, seem to exhibit a slightly vitrified surface.

Prior to the invention of pottery, man's experiments as a cook had been of a very rudimentary character; with the discovery of fire he had learned to broil his fish and to roast his meat by holding it with a stick over the flames, and to bake his bread-roots in the ashes. In his efforts to improve upon these methods, he learned to make a rude oven, by digging a pit in the ground, in which he built his fire and placed his game, covered with heated stones. The ant-hills of Africa, having clay walls, furnish the natives with convenient ovens, which they clean out and heat red-hot in order to bake their rhinoceros joints, while others utilize a smouldering fire in a hollow tree.

Methods of boiling water were of later invention, and seem, at a recent period, to have been unknown to some savage tribes. Before earthen vessels were used, this was accomplished with difficulty, the mode most generally employed being that of heating stones, which were dropped into leathern sacs or water-tight baskets. As a single instance, I might mention that among the Assinaboins the meat was cooked in the raw hide of the animal itself, which was pressed down into a hole in the ground to make a basin, and filled with water into which red-hot stones were thrown from a fire near by. Smaller leathern sacs and pouches were sometimes held over the fire till the water they contained was heated; but the process was a tedious one.

The invention of pottery furnished men with suitable vessels for household uses, and made cleanliness in cooking possible.

With the introduction of farinaceous food sprung up the earliest apprentices to the miller's craft. The Indian may first have roasted the succulent green ears of corn; the Lake-dweller may have parched his millet or his barley to fit it for his palate, but both, ere long, found out the necessity of reducing the ripened kernel to flour or meal with which to make his primitive hoe-cakes or his wheaten loaves. The natural depressions in the rocks were first employed as basins in which to crush grain; but with the patience which everywhere we find characterizes the labors of primitive peoples, he learned, in time, to fashion capacious mortars of hollowed stones, and in these, with pestles of like material, or disc-shaped crushing stones, to pound or roll the grains to a suitable fineness. To make one of these stone mortars was a tedious task, and the North American Indians after a time learned to make wooden mortars by kindling a fire on a suitable log, placing wet clay about it to give the burned cavity the proper form, and then chopping the charred portions away with their stone knives, they shaped the mortar to suit their will. Modified forms of these wooden mortars are still in use among very many civilized, as well as uncivilized, tribes.

It is interesting to note in what crude beginnings the architectural art had its origin; for to the primitive man, if we suppose his earliest life to have been in tropical climates, there was no need of walls or roofs, and it is by no means surprising to find that the savages of Van Dieman's Land, and the Australians about Cape Leveque, had no houses at all.

The overspreading branch which sheltered him from the storm first gave him its suggestion, and, after the fashion of certain of the Australian tribes, he thrust light pliable rods into the ground, and laid palm leaves thereon, rather as a shelter from the wind than for any other purpose. The Veddahs make rude huts of boughs and bark. The Indians of Paraguay cut three or four boughs, and thrusting the ends into the ground, throw a skin over them, this being their only shelter. The Andaman Islanders plant four posts in the ground, the front ones six or eight feet high, the back ones two feet from the ground, over which they place a roof of bamboo, or a few palm leaves fastened together, thus showing an important step in progress, which is carried still further by the Patagonians, who form their huts by planting poles

“with forked tops to hold cross-pieces, on which are laid poles for rafters, to support the covering which is made of skins of animals sewn together so as to be almost impervious to rain or wind.”

The carpenter's art seems to have developed most rapidly in southern lands, and in the New Zealand huts, with sloping, grass-thatched sides, the mat-covered dwellings of the Hottentots, we trace the gradual steps of progress, till, in the dormitories of Tahiti and the well built dwellings of cocoa-wood and tree-fern used by the Feejeeans, we have the prototype of the frame houses of modern architecture.

The Fuegian huts are made of trees with their tops placed together, the earliest suggestion of a tent, which finds its development in the poles tied together at the top, and covered with buffalo skins, which constitutes the Indian wigwam, and which, in its various modifications, was the tent dwelling of most nomadic tribes.

In cold climates, or those where nights were cold and days were hot, while man was still a hunter, and ignorant of the more peaceful arts of herding and agriculture, he found his earliest shelter from the sun-heat or the night-chill, like Homer's Cyclops, in natural caves and mountain grottoes. Such, we learn, were the dwelling places of the early Grecians, and of the people of Siberia, before the Samoyedes. When, however, these proved inconvenient or insufficient for his needs, he dug out from the face of chalky cliffs, rock shelters, such as the Caucasian crypts, or those which abound in the south of France, where, it is said, “in places the whole face of the rock is honey-combed with doors and windows leading into suites of rooms, often in tiers, one over another.”

As circumstances changed man's condition, and he was compelled, from whatever cause might be, to leave the mountain caves and build sheltering-places for himself upon the plains, he first learned to rear dwellings of stone, as a child builds houses with his painted blocks. Naturally, his first models were the caves of the rocks in which he had lived, and the first stone houses were like those pre-historic structures found in Sweden, built with narrow galleries, generally facing the sun, as did the narrow entrances of the mountain caves, these leading into the chambers of the dwelling corresponding with the cave itself. It is a curious fact that in Scandinavian folk-lore this resemblance is noted, these

dwellings being called "giants' caves," "goblin caves," "giants' tombs," etc., etc.

Other races may have found hints for their own dwellings in the homes of animals, such as the dome-shaped lodges of the beaver, which would seem to have been imitated by many savages in their efforts at hut building. The resemblance is notable between these and the snow huts of the Esquimaux, who cut oblong slabs of compact snow, with which they build the walls of dome-shaped, circular huts, sometimes fifteen feet in diameter and nine to ten feet high, on the southerly side of which they cut a door and build a passage-way. On one side of the roof they cut a round hole two feet in diameter, and insert in this a clear plate of ice which serves as their window. Within is a bank of snow thirty inches high, reaching nearly around the room, which, covered with reindeer skins, forms the bed. The character of the dwelling forbids the use of fire, even if the materials for this were obtainable, which is not the case. The temperature is kept usually below the freezing point, though in each hut is to be found a stone lamp filled with seal oil, burned with a wick of dry moss, its principal use being to thaw snow to supply water for quenching thirst.

When men were first led to provide burial places for the dead it was a natural analogy that caused them to imitate their dwellings in their tombs. Caves of the rocks which had provided shelter for the living were deemed equally suited for the interment of the dead, a custom which long survived the cause of its first adoption, as when Abraham bought for a burial place the cave of Machpelah from the children of Heth, and as illustrated by the later practice of the Jews in Jerusalem; indeed, it would seem that all crypts, temple grottoes and catacombs had their origin in this primitive custom. So, in northern countries we find that the pre-historic gallery-houses of Scandinavia, and the more recent ice-huts of the Esquimaux, are reproduced in the Danish "gang graben," or passage graves, which are chambered tumuli having a stone passage leading into a large central room, around which the dead sit.

The New Zealander is still buried in his own house, so that a city of the living becomes in time a city of the dead. Among the Circassians and certain of the Tartar tribes the resemblance is

as marked between the dwellings and the tombs, as in the case of the Karaite Jews and the modern Greeks, is the resemblance between their tombs and their churches.

The early temples of mankind were kindred to their early dwellings and burial places. The hill tribes of India still erect rude dolmens or stone tombs, and surround them with circles of large stones, akin to the great circles of Stonehenge and Abury, which were primitive temples, and to the still older sepulchral stone circles of Denmark.

The mounds of earth which were first raised over the remains of the dead, and which abound in all quarters of the globe, were, in time, truncated, and made the temple sites for the rites of an early priestcraft, and became the type of the stone temples and teocalli, which, in Mexico and the South Sea Isles, excited the wonder of the first European explorers.

Time forbids my dwelling at length upon the origin of many of the arts, perhaps of scarcely less value and interest than those to which I have referred. I might mention, though you all know it, that the love of ornament is inherent in the breast of frail humanity, and the decorative arts began when the first daughter of Eve caught the reflection of her form as she stooped to drink from the crystal spring, and bethought herself of artificial charms wherewith she might enhance the grace of Nature's handiwork. It is hardly necessary to add that these arts were far advanced before the tailor's or dressmaker's crafts were thought of. The milliners of to-day, skillful in combining gay feathers and bright sprays into tasteful head adornments, are but practicing in the line of direct succession that oldest and sometimes most absorbing of feminine occupations. Bright pebbles and glittering pieces of shell, perforated teeth, and beads deftly wrought from bone or stone held a mighty place in the esteem of simple, unsophisticated man and woman; for, though perhaps slower to catch the art, and less dexterous in its practice, aboriginal *men* became, in no less degree than their wives, its zealous devotees, and the later generations have but followed in their footsteps.

The art of pictorial representation had its first beginnings in such rude outlines of animals or other objects as were carved upon horn and bone by the pre-historic Cave-dwellers of France, the degree of skill shown being not much inferior to that of the

Lapps and other northern tribes of to-day. These were man's first records, and much might be said of their development into systems, such as are shown in the picture writing of the Aztecs, or that long since employed by the North American Indians, and supplemented in their case by the curious use and significance of their belts of shell beads called wampum.

I have already referred to the early growth of a division in labor, the arrow-making craft being an instance of this. Another example might be found in the making of pottery, which in due time became a profession. On our continent another profession, marking an art and a custom unknown to the old world, was that of pipe-making. The poet has wrought into his verse the olden legend of the Father of Life standing upon the great red pipe-stone quarry and bidding his children fashion it into the peace-pipes which should henceforward make them brothers. Faithfully was his injunction followed; for, though in after days they were made of terra-cotta in great abundance, to this hour no other pipe has the value and the significance to the mind of the North American Indian that is possessed by the stone pipe seen at every council fire. In the shapes into which the pipe-maker formed these, his fancy ran riot, and the figures of common animals, or of the human form divine, alternate in them with the most grotesque and fanciful designs.

The art of drilling in stone was essential to the manufacture of pipes, and, in the absence of any knowledge of metals, was carried to great perfection. With the hard, sharp point of some woody leaf, or with a hollow section of tough cane, and a little moistened sand, with progress painfully slow, he patiently drilled the stone till the bowl was hollowed out, and the hole bored for the stem. At last he thought of combining the bow with the spindle and twisted cord already used in fire-making, thus inventing the bow-drill, by which his labor was made less arduous; an invention, I may add, in common use in mechanics to-day.

The red-pipe stone was, however, found in only one place on the continent—far in the northern interior—and had to be sought for by the sea-board tribes from those nearer the source of supply, who, in their turn, desired the conch shells from the gulf or the copper from the upper lakes, just as in the old world, the nations of Central Europe, or, in later days, the



Phœnicians had to seek for tin from the abundant supplies of the British Isles, and in such rude barter commerce first began.

As man became more warlike and distrustful of his fellows, he was compelled to devise means of self-protection, in doing which he was taught the first lesson of fortification—how to throw up banks of earth to oppose a barrier to his foe—traces of which we still find among the pre-historic remains of Europe, and which are discovered of a truly remarkable character about the sites in our own valleys, where once dwelt the people of the mounds. In the erection of such works as these, we may trace the first development of engineering skill, and perhaps the origin of standards of measurement and of the earliest means of determining angles. Thus science first began; and as the simple savage learning the healing properties of herb or root initiates the study of botany and of medicine, so the untaught shepherd watching the stars by night learned to look for them in their appointed places, and opened the way for a new light to shine upon the world.

The art of working in metals was not learned till long ages had rolled over the earth from the time that man first became its occupant. It was almost unknown on the western continent upon its discovery; for the copper mined by the Indians and the earlier Mound race was to them only a malleable stone which they could pound with their flint hammers into rude spears, arrow-heads and knives. The Peruvians and the Central American tribes had, it is believed, a slight knowledge of bronze, the art of making which seems to have been largely practised by the Swiss Lake-dwellers, and, to a less degree, by the people of the Kjökken-Möddings.

The first Metallurgists were no doubt the workers of gold and copper, which, from their bright color, were attractive to the eye, and were tractable under the primitive implements with which they were treated. When man first learned that he might melt them in the fire, and by mixing them with other soft metals such as tin, could make alloys of greater capability than the pure metals themselves, he made a vast stride forward, and when Tubal Cain and those who sat at his feet and followed in his ways had acquired the art of melting, purifying and working iron, mankind had entered the historic epoch; acquainted with the sword and the plowshare he had begun a mighty career of conquest and of growth, and was primitive man no longer.

In such simple beginnings, out of the dire needs of humanity, have been born the arts of life as known to civilized man; with patient toil has he wrought out, by means God-given, the problem of his growth and their advancement. The past has been prolific, and in its glorious fruition we may read the promise of a hopeful future.





(*From the American Naturalist, February, 1880.*)

### ANTHROPOLOGY.<sup>1</sup>

RAU'S PALENQUE TABLET.—The latest contribution to knowledge issued by the Smithsonian Institution, is No. 331 of its publications, a quarto of seventy-six pages, by Dr. Charles Rau, on the Palenque Tablet in the United States National Museum. The contents of the work are as follows: "Chapter I.—History of the Palenque Tablet; Chapter II.—Explorations of Palenque; Chapter III.—The Temple of the Cross; Chapter IV.—The Group of the Cross; Chapter V.—Aboriginal writing in Mexico, Yucatan and Central America; Appendix.—Notes on the Ruins of Yucatan and Central America." In the first chapter we have a minute relation of the manner in which the tablet found its way from the Temple of the Cross to its present position in the National Museum. In the second chapter Dr. Rau gives a narration of the various explorations of these interesting ruins. The name Palenque is derived from a village about eight miles away, called Santo Domingo del Palenque. The ruins were discovered in 1750, by a party of Spaniards, and surveyed for the first time by order of Ramon de Ordoñez in 1773–1784. The first exploration which lead to any result was that of Capt. Antonio del Rio in 1787; his manuscript was published in London, in 1822, with drawings from Castañeda, the artist of Dupaix. Capt. William Dupaix, in 1808, visited Palenque, with an artist named Castañeda. The MSS. and drawings will be found in Vols. IV, V, VI, of Kingsborough. Baron de Waldeck lived two years at Palenque making surveys and sketches, 1832–4. His plates, with text by De Bourbourg, was published in Paris, in 1866, by the French Government.

When Dupaix visited Palenque the three slabs constituting the Group of the Cross were all in place. But at the time of Waldeck's visit, the right one, now called the Smithsonian Tablet, was in fragments on the floor; the middle one had been carried off to the banks of the river by a vandal who wished to adorn his house with it; and the one on the left was in its original

<sup>1</sup>Edited by Prof. OTIS T. MASON, Columbian College, Washington, D. C.

position, which it now occupies. Stephens and Catherwood visited the spot in 1840, and were entertained by Mr. Charles Russell, our counsel at Laguna. They made drawings of the ruins, and shortly after their visit the fragments of the right hand slab were sent to the National Institute in Washington, where it arrived in 1842. The site has since been visited by Arthur Morelet in 1846, and M. Désiré Charnay, for the French Government, in 1857. The tablet was transferred to the Smithsonian Institution 1858, and in 1863, while making a cast for Prof. Henry, Dr. George A. Matile discovered that this was the missing slab from the Palenque group, not drawn by explorers after Dupaix. It was broken again after Dr. Matile's cast was made, but reconstructed and set in its present frame, from which Dr. Rau's photograph was taken. Whatever doubt may have remained after Matile's argument, is now dispelled by reference to the outline plate of Dr. Rau's work, in which the whole Group of the Cross is again restored.

The occurrence of the sign of the cross in America anterior to its discovery by Columbus, has been the marvel of archæologists. But the fact of its appearance in many places where Christian influence had never been felt, compelled the student to look for other motives in its existence. The whole subject is reviewed in Chapter IV, pp. 39-46. Of equal interest with the allegorical sculpture is the subjects of the hieroglyphics, on which Dr. Rau has bestowed a great deal of faithful study. The supposed key to their interpretation is a MSS. found in the Royal Library of Madrid, by Brasseur de Bourbourg, in 1863, which is a copy of one composed by Diego de Landa, in 1579, and giving, among other things, an alphabet of thirty-three signs. It will be remembered that a similar old MSS. is mentioned by Sr. Orozcoy Berra, in *Anales del Museo Nacional de Mexico*, containing the Lord's Prayer in symbols, partly Aztec and partly ecclesiastic. All attempts to interpret the Central American glyphs and manuscripts by Landa's alphabet have proved failures. Dr. Rau, the most cautious of theorists, does not attempt a solution; but on page 61 gives a diagram of his outline plate, by which every glyph on the tablet may be easily referred to (it is a pity that the letters and figures do not occur on the margin of the plate itself). On pages 62 and 63, some of the glyphs are analyzed, and the places where the elements are to be found, are indicated. The author concludes that the analogies between Landa's signs and the glyphs warrant the suggestion that the inscriptions constitute a chronological record of some kind. On pages 53 and 64 Dr. Rau corrects an error of Humboldt, Kingsborough, Stephens, and others, as to the close relationship between the Aztecs and ancient Mayas based on the Dresden Codex, which is clearly shown to be of Maya and not of Mexican origin at all.

On page 75 the author reaffirms the view of Stephens, Ban-



croft, as well as his own, "that the Yucatan structures were built by the Mayas, the direct ancestors of the people found on the peninsula at the Conquest, and of the present native population."

ANTHROPOLOGICAL NEWS.—Mr. H. R. Howland is the author of a brochure entitled "Primitive Arts and Modes of Life," the substance of which was read before the Buffalo Society of Natural Sciences, March 15, 1879. The object of the author is to show how, in simple beginnings, out of the dire needs of humanity, have been born the arts of life as known to civilized man; how with patient toil he has wrought out, by means God-given, the problem of his growth and their advancement.

A printed notice of four pages, announces the formation, in Boston, of the "Archæological Institute of America," for the purpose of promoting and directing archæological investigation and research, by sending out expeditions for special researches, by aiding the efforts of independent explorers, by publication of reports of the results of expeditions which the institute may undertake or promote, and by any other means which may from time to time appear practicable. The institute consists of life members contributing at one time \$100, and of annual members paying \$10 per annum. Membership is now open to all persons interested in the objects of the institute, and who may desire to join it. The call is signed by Francis Parkman, W. W. Goodwin, Alexander Agassiz and other distinguished scholars. Prof. C. E. Norton is president, and Mr. Edward H. Greenleaf, Museum of Fine Arts, Boston, Mass., secretary, to whom all communications should be addressed.

"The Aboriginal Soapstone Quarries in the District of Columbia" is the title of a brochure from the Twelfth Annual Report of the Peabody Museum of Archæology and Ethnology, by Elmer R. Reynolds. The discovery of the soapstone quarry at Chulu, Amelia county, Virginia, seems to have kindled a great deal of enthusiasm in our archæologists with reference to aboriginal quarrying and mining. Dr. Reynolds is an indefatigable hunter, and his success in discovering soapstone quarries in the District of Columbia, almost under the shadow of the National Museum, is graphically described in the pamphlet before us.

The Society of Biblical Archæology has for its object the study of the languages, remains and natural history of those lands with which the Jews were associated, from the earliest times to the close of the canon of Scriptures, with a view to the better understanding of the Old and New Testament. In point of fact the history of the Jewish race demands an intimate acquaintance with the civilizations of the Nile valley, Mesopotamia, the slopes of the Lebanon range, and, in latest Biblical times, of that of Greece and Rome. The society has for its president Dr. Samuel Birch, the Egyptologist, and includes many of the most distinguished men in England among its members. The honorable secretary

for foreign correspondence is the Rev. A. H. Sayce. An acquaintance with its publications is indispensable to those who wish to pursue the study of Oriental archæology.

The first number of Vol. ix of "The Journal of the Anthropological Institute of Great Britain and Ireland, August, 1879," contains the following papers: Exhibition of the cranium of a Native of one of Fiji islands, by Prof. Flower; The Primitive Human Family, by C. Staniland Wake; On an *Echelle de Couleurs*, published by the Société Sténochromique of Paris, by E. W. Brabrook; Remarks on the Geographical Distribution of Games, by Edward B. Tylor; On some Rock Carvings found in the neighborhood of Sydney, by Sir Charles Nicholson; Relationships and the names used for them among the peoples of Madagascar, chiefly the Hovas, together with observations upon marriage customs and morals among the Malagasy, by the Rev. James Seabee, Jr.; History of the South-western Barbarians and Chaou-Seën, translated from the "Tseen Han Shoo," book 95, by A. Wylie, Esq.; Rag-Bushes and kindred observances, by M. J. Walhouse (See "Fetish or Rag-Bushes in Madagascar," *Saturday Magazine*, Nov. 22).

Mr. Wake's paper is a continuation of the author's discussion of a kindred subject in Vol. VIII, of the *Journal*. After reviewing Mr. McLennan's theory of the origin of society in polyandry, he adds, "We cannot suppose that the primeval group of mankind consisted only of a woman and her children; and if the woman had a male companion, we cannot doubt, judging from what we know of savage races, that he would be the head and chief of the group.

\* \* \* Self interest chiefly would govern the father in connection with the marriage of his daughter. Whether the marriage was to be a permanent or a terminable engagement, he would stipulate that they should continue to live with or near him, and that her children should belong to him as the head of the family group. In this case, not only would the children form part of the family to which their mother belonged, but the husband himself would become united to it, and would be required to labor for the benefit of his father-in-law. When the wife left her father's house to reside with her husband, he had to purchase the privilege by giving her father and other relatives handsome presents. [This could hardly have occurred at first, when property was not held in severalty. It marks a higher step in culture]. In this case the children belonged to their father's family, and the fact of the wife going to reside among her husband's relatives meant the loss of the children by *her* father's family. The presents may, therefore, be supposed to represent the price given by a man for his wife's offspring to her relatives. Probably the wide-spread custom of pretended forcible marriage was originally thus connected with the rights of the woman's relatives, and may have

originated in the desire to obtain for nothing what could otherwise be acquired only by a purchase fee.

These rights, according to Morgan, are inheritance of the property of deceased members, reciprocal obligations of help, defence, and redress of injuries, and the obligation not to marry in the *gens*, although practically, the property was appropriated by the nearest of kin. Morgan says nothing of any right of the *gens* over the marriage of its members, and it would seem not to have had any voice in the matter. Reference to the custom of blood-revenge confirms the view that, for certain purposes, a smaller family group than the *gens* is recognized by the people having that organization. The example of the Polynesians, who are said not to have arisen to the conception of the *gens*, shows that before this was developed, not only was the *lex talionis* recognized, but the law of marriage and the rights of parents over their children were fully established. It is evident, therefore, that the primitive family cannot have originated with the *gens*, or clan; on the contrary, the clan was based on the family or group of kinsmen, which would be a parent, his wife or wives; their daughters, together with the husband and children of the latter.

The view of the ancient family held by De Coulange and Sir Henry Maine would be complete if it provided for the fact, that descent was originally traced by the female line in preference to the male line. The defect thus revealed will be removed if it can be shown that descent through the male is for certain purposes recognized equally with that through the female." Mr. Wake, in closing, draws attention to the important fact first noticed by Mr. Fiske, that owing to the prolongation of infancy children had to be nurtured by female parents aided by males to some extent; and to Mr. Spencer's remark that, "To the yearnings of natural affection are added in the early stages of progress, certain motives, partly personal, partly social, which help to secure the lives of children; but which, at the same time initiate differences of status between children of different sexes. There is the desire to strengthen the tribe in war; there is the wish to have a future avenger on individual enemies; there is the anxiety to leave behind one who will perform the funeral rites." Under the influence of these various ideas and circumstances, the custom of tracing kinship for certain purposes in the female line would be developed by the time that the habit had been formed of wives leaving their parents to reside among the husband's family. When this took place the custom would be fully established under the influence of polygamy, and the development of the gentile organization would almost necessarily follow. The primitive idea of kinship through the father would, however, still remain in full force with the attributes which originally appertained to it, namely, the headship in the family group of the oldest male ancestor, whose authority is practically represented by the tribe, and the non-intermarriage of those thus connected.



(From the *American Naturalist*, March, 1880.)

### ANTHROPOLOGY.<sup>1</sup>

OBER'S CARRIBEES.—Lee & Shepard, of Boston, have just issued a work entitled "Camps in the Caribbees," by Mr. Frederick A. Ober, who undertook a scientific exploration of the Lesser Antilles in 1876. The most of the volume is occupied with a racy account of the naturalist's experience in those islands while collecting specimens in zoölogy. Chapters VI, VII and XIII, however, come under our immediate topic. In two of the smaller islands, Dominica and Saint Vincent, are the only remnants of that powerful race which struck terror into the hearts of Columbus and his followers. Humboldt relates that the Caribs of South America called themselves Carina, Calina, Callinago, Caribi, and that the name Carib is derived from Calina and Califoona; the latter word being the ancient name of their people given to Mr. Ober by the Caribs of St. Vincent and Dominica. This name the author seeks to connect with Shakespere's Caliban, and Robinson Crusoe's "Man Friday." Their ancient savage manners have wonderfully changed, for they are now gentle, hospitable, and kind to their women. They are naturally much lighter than the typical Indian, which has given them the title of "Yellow Indians." In Dominica there are but twenty families of pure Caribs; in Saint Vincent less than six. In the latter island there is an interesting people, called "Black Caribs," formed by the intermarriage of the natives with negroes. Mr. Ober confirms the statement of a difference between the language of the men and that of the women. They have, besides, a certain form of speech which they use among themselves in war-councils. The author inclines to the view that the Caribs were the race who made the beautiful stone implements, collars, mammiform stones, masks, &c., found throughout these islands. In the National Museum is a collection of implements brought by Mr. Ober from Saint Vincent. The volume before us will prove interesting not only to the ethnologist but to the ornithologist, as the appendix contains a list of all birds collected.

MOUND BUILDERS.—The second number of Vol. II, of the *American Antiquarian* contains the following papers: The Mound Builders; Explorations by the Muscatine Academy of Sciences, by J. E. Stevenson; Alaska and its Inhabitants, by Rev. Shelton Jackson; Antiquity of the Tobacco Pipe in Europe. Part II. Switzerland, by E. A. Barber; Fort Wayne (old Fort Miami) and the Route from the Maumee to the Wabash, by R. S. Robertson; How the Rabbit Killed the (Male) Winter, an Omaha Fable, by J. O. Dorsey; The Delaware Indians in Ohio, by S. D. Peet; The Silent Races, by L. J. Dupré; Sacrificial Mounds in Illinois and Ohio.

The paper of Mr. Stevenson upon the explorations of the Muscatine Academy is a very important contribution to mound-literature. "From an imaginary point near Drury's Landing, a few

<sup>1</sup>Edited by Prof. ORIS T. MASON, Columbian College, Washington, D. C.



miles above and east of Muscatine to another like point, and down the river, near Toolesboro and New Boston, distant from the first point twenty miles, the bluffs (once the Mississippi shore line) recede from each other about eight miles, and upon all the highest points are found groups of mounds, numbering from two to one hundred or more, varying in base diameter from fifteen to one hundred and fifty feet, and from two to fifteen feet in height. In all there cannot be far from two thousand five hundred mounds." Mr. Stevenson enters into a calculation of the time required for their erection. Among civilized peoples, only the head of the family is engaged in active industry; but it is quite possible that men, women and children entered with enthusiasm into this national work. The papers of Messrs. Jackson, Barber, Robinson and Dorsey, are all of permanent ethnological value. Mr. Peet will publish also a quarterly, entitled *The Oriental Journal*.

Mr. F. W. Putnam communicated the following note to the Boston Society of Natural History, October 15, 1879, on the occurrence of chambered barrows in America:

"The chambered mounds are situated in the eastern part of Clay Co., Missouri, and form a large group on both sides of the Missouri river. The chambers are, in the three opened by Mr. Curtiss, about eight feet square, and from four and a half to five feet high, each chamber having a passage-way several feet in length and two in width, leading from the southern side, and opening on the edge of the mound formed by covering the chamber and passage-way with earth. The walls of the chambered passages were about two feet thick, vertical, and well made of stones, which were evenly laid, without clay or mortar of any kind. The top of one of the chambers had a covering of large flat rocks, but the others seem to have been closed over with wood. The chambers were filled with clay which had been burnt, and appeared as if it had fallen in from above. The inside walls of the chambers also showed signs of fire. Under the burnt clay, in each chamber, were found the remains of several human skeletons, all of which had been burnt to such an extent as to leave but small fragments of the bones, which were mixed with the ashes and charcoal. Mr. Curtiss thought that in one chamber he found the remains of five skeletons and in another thirteen. With these skeletons there were a few flint implements and minute fragments of vessels of clay.

"A large mound near the chambered mounds was also opened, but in this no chambers were found. Neither had the bodies been burnt. This mound proved remarkably rich in large flint implements and also contained well-made pottery and a peculiar 'gorget' of red stone. The connection of the people who placed the ashes of their dead in the stone chambers with those who buried their dead in the earth mounds is of course yet to be determined."



ANTHROPOLOGICAL NEWS.—The question is frequently asked, How does anthropology fare in the catastrophe which destroyed the three surveys of Hayden, Wheeler and Powell? It is the purpose of this brief note to answer this question. In the same bill in which provision was made for the establishment of the new survey under Clarence King, an appropriation was granted for continuing the ethnographic work, and this resulted in the organization of what is known as the Bureau of Ethnology, and Major J. W. Powell was put in command of the corps. This Bureau is now engaged with the aid of skilled collaborators in the following work: 1. Preparing a history of Indian affairs, including an atlas of treaty cessions, exhibiting by graphic signs and descriptive text, the manner and time of the yielding up of our territory by the aborigines. 2. Carrying on an exhaustive investigation concerning the languages of the North American Indians, including a series of grammars and dictionaries and a bibliography. At present it is found convenient to group them into the following linguistic stocks: Adaike, Achomawi, Aleut, Algonkin, Alikwa (Yurok), Ara (Karak), Atakapa, Atimoke (Timucua), Billekula, Bribri, Caddo, Cherokee, Chetimacha, Chiapanec, Chimariko, Chimseyan, Chinuk, Coahuiltec, Coiba (Cueva), Dakota (including Catawba), Galibi, Haida, Hailtsuk, Huave (Wabi), Inuit, Iroquois, Kalapuya, Kera Pueblo, Kaiowa, Kusa, Kutené, Maidu, Maklaks (Klamath), Maskoki, Maya (Mixe), Mutsun, Nahuatl, Numa, Nutka (or Bowatchat), Otomi, Pani, Pirinda, Pomo, Rio Grande Pueblo, Sahaptin, Sasti, Sayusklá, Selish, Seri, Takilma (Kalapuya), Tarasco, Telame (including Santa Barbara and San Antonio), Terraba, Thlinkit, Tinné, Tonkawé, Uluá (Maya), Washo, Wayiletpu, Wichita, Wintum, Wishosk, Xicague (Nicaragua), Yakona, Yokuts, Yaki, Yuma, Yutchi, Zapotec, Zuñi.

3. A collection of a complete synonymy of North American Indians as material for an encyclopedia or classical dictionary of every tribe known to have lived on our continent. 4. An investigation into the sign language, by Colonel Garrick Mallery. 5. An account of savage mythology or philosophy, under the special direction of Major Powell. 6. The study of the arts and industries of all our tribes. During the past summer a party consisting of Mr. James Stevenson, Mr. Frank Cushing and Mr. J. Hillers were dispatched to the Pueblos, with instructions to leave no object, sketch, or custom that would be valuable to the ethnologist. Mr. Stevenson had charge of the collection, Mr. Hillers of the photography, and Mr. Cushing of the ceremonial part of the work. The first two gentlemen have already returned laden with four car loads of the finest specimens of aboriginal art ever brought together. Mr. Cushing, who has succeeded in ingratiating himself with the Pueblo people, will remain over the winter. The enumeration of a few of the objects in this superb collection will give some idea of its rare value. From Zuñi: pottery, whole and

in fragments, together with clay, and all the implements used in pottery manufacture and decoration, leather dye, dried peaches, bread used in dance, medicine sticks, pottery drums, war shields, carved chairs, snow shovels, bread paddles, dried meat, bows and arrows, toys, moccasins, stone molds, mallets, quoits, rattles, herb tea. From the Moquis:—dresses, looms, sheets, belts, blankets, stockings, dance-ornaments, pouches, sashes, tassels, rabbit-skin robes, saddle bags, boomerangs, stone images, arrows and bows, with all the implements for making them, corn-mills, virgin's head dress, cradles, hair curlers, forceps, lariats, moccasins, dance-ornaments, wrist guards, medicine boxes, balls for play, vermin killers, gambling cups, mush sticks, snares, agricultural implements, water bottles, paint rock, baskets for every purpose. Scattered through the valley of the Rio Grande are nineteen Pueblo villages, and it is designed to make characteristic collections at every one. Mr. Hiller's collection of photographs includes views of the interior and exterior of these Pueblos from every accessible point of view, and of the natives of various ranks in their characteristic attire. The most interesting of his pictures is a group of albinos, the skin and hair being quite white, who intermarry with the other members of the tribe and are very highly esteemed.

Mr. Wm. J. Rhees, chief clerk of the Smithsonian Institution, has edited a pamphlet of 96 pages, entitled "Visitor's Guide to the Smithsonian Institution and National Museum." The latter portion, from page 63 to the end, is occupied with a brief description of Anthropological Hall, under the direction of Dr. Charles Rau. Although the publication is provisional, it is exceedingly timely, and will assist the visitor to acquire a good general knowledge of our national collection.

From London *Nature* we extract the following list of short articles: December 4th, The Turkomans, by H. H. Keane, a review of a paper by Professor Arminius Vambery, before Anthropological Institute of London; Finnic ethnology, a review by A. H. Keane, of "Finnish Crania," by Gustav Retzius, of Stockholm, in December 25th. Dr. Retzius adopts the view that the Finns are amongst the most recent arrivals from Asia; Mr. J. C. Galton reviews at length in January 1 and January 8, Maclay's "Observations upon the Papuans of the Malay coast of New Guinea," giving an account of many most interesting customs; January 5, a review of the following work: Catalogue of specimens illustrating the osteology and dentition of vertebrated animals, recent and extinct, contained in the museum of the Royal College of Surgeons, of England, by William Henry Flower, conservator of the museum. Part I, *Man*. (London: David Bogue, 1879.)

The *Academy* for January 3, announces that Dr. Robert Hartmann is the author of a monograph, entitled "Die Nigritier, eine

anthropologisch-ethnologische Monographie," published as a supplement of five hundred pages to *Zeitschrift für ethnologie*, Berlin.

The October number of the *Revue d'Anthropologie* contains the following original papers and reviews: Notes sur la fécondité des mulâtres du Sénégal, by M. Berenger-Feraud, 12 pp.; de la notion de la Race en Anthropologie, by M. Paul Topinard, 72 pp.; Note sur le Développement du Cerveau considéré dans ses Rapports avec le Crâne, by M. Ch. Féré, 14 pp.; Une négresse blanche, by Dr. Smester, 7 pp. La Mythologie Comparée, of M. Girard de Rialle is reviewed in a critique of eight pages, by M. André Lefèvre. The chapter entitled "Revue Préhistorique, by M. E. Callamand, embraces a review of Greenwell's 'British Barrows,' " eleven pages, and a résumé of the prehistoric portion of Bulletin de la Société d'Anthropologie, 4 pp. The book review, by M. Zaborowski, is a critique of 8 pp. on Chudzinski's "Anatomie comparée des circonvolutions cérébrales." Under the Revue des Journaux are reviews upon: Etude sur les crânes boughis et dyaks du Muséum d'histoire naturelle, by Dr. Montano; Anomalie symétrique héréditaire des deux mains, by Dr. Bœchat de Fribourg, in *Bull. Congr. medic. intern. de Genève*, 1878; Aperçu général de l'hérédité et de ses lois, by Dr. Marc Lorin, Thèse inaugurale de la Faculté de médecine, Paris, 1878; Annales de démographie internationale, recueil trimestriel publié sous la direction du Dr. Arthur Chervin, Deuxième année, Paris, 1878; Lectures on the Indigenous races of the Pacific Ocean, by William H. Flower; Anthropology of the county of Gloucester, by Dr. John Beddoe, in *Trans. Glouc. Arch. Soc.*, Bristol, 1878; Essay upon the anthropology of Southern Tyrol, based upon the examination of skulls discovered at Saint Pierre, near Meran, by M. Rabl-Ruckhard, *Berlin Gesellsch. f. Anth.*, &c., Feb. 16, 1878. The number closes with brief extracts, a short résumé of the various anthropological congresses during the year, and a bibliographical bulletin of five pages. The most valuable contribution to the number is the paper of M. Topinard upon the idea of "race" in anthropology, and demands more space for a review than we can give it here.

Prof. Friedrich Müller contributes to *Das Ausland*, No. 10, a short article upon the language of animals.

The *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte* from January-February of the current year, give us a digest of the proceedings of that celebrated society. In turning over the leaves we find quite extended abstracts of the following communications: Session of Jan 11. Skull from the Bone-Cave of Gorenice, near Ojcow, Poland, by Ferd. Römer, in Breslau, with Table IV; Upon the stone implements of Japan, and upon various antiquities in the collection of the German Society for the study of Eastern Asia, by Hr. v. Brandt; Results of his measurements of school children, by Pro-

fessor Lucæ; Upon the language of the Australians, by Hr. Steinthal. Session of Jan. 18: "Face-urn" from a stone-cyst grave in Gabolin (Kreis culm, West Prussia); Fung Schui, or Chinese "Geomanty;" Black pottery in India and in Turkey, by Hr. Jagor; Upon the cemetery of Giebichenstein, near Halle, Hr. Credner. Session of Feb. 15: The canicars of Southern India, by Hr. Jagor.

The following titles from various sources may be of service to some of our readers: The oldest art in the world, by W. J. Loftie, (*Macmillan's Mag.*) *Eclectic Mag.*, Dec., 4 pp.; Beasts, Birds, and Insects in Irish Folk-Lore, by Letitia McClintock, *Belgravia*, Nov., 8 pp.; The Ancient Remains at Bounarbashi, by W. Simpson, *London Academy*, Nov. 1; Cinderella, by W. R. S. Ralston, *Nineteenth Century*, Nov., 22 pp.; The study of Cuneiform Archæology, by Rev. B. W. Saville, *Clergyman's Magazine*, Nov., 16 pp.; The Deluge: Its traditions in Ancient Nations, by F. Lenormant, *Contemporary Rev.*, Nov.; The Supreme God in the Indo-European Mythology, by J. Darmsteter, *Contemporary Rev.*, *Living Age*, Oct. 25, 10 pp.; The Hittites in Asia Minor, *London Academy*, Nov. 1; Monumental Inscriptions in all parts of the world, *Calcutta Rev.*, July; Pliocene Man, by Dr. C. C. Abbott, *Kansas City Review*, Nov.; Pottery in Prehistoric Times, by L. Jewitt, *Illustr. Art Journ.*, Nov., 3 pp; Preservation of Ancient Ruins and Monuments, *Chamber's Journal*, Nov.; Les Temps oubliés, by E. Littré, *Philosophie Positive Revue*, Dec., 8 pp.; Fetish or Rag Bushes in Madagascar, *Saturday Mag.*, Nov. 22; The Music of Hindustan, by B. S. P. Ghosha, *Calcutta Rev.*, July; Institutions et Mœurs Annamites, by T. V. Ky, *Philosophie Positive Revue*, Dec., 12 pp.; Language and the Egyptian Language, by Dr. C. Abel, *New Englander*, Nov., 15 pp.; Des Origines et de l'Evolution du Droit économique, by H. Denis, *Philosophie Positive Revue*, Dec., 12 pp.; The Bohemians and Slovaks, *Westminster Rev.*, Oct., 30 pp.; Cabul and its People, *Saturday Mag.*, Nov. 8, 2 pp.

The following are recent articles of interest:

- CHARENCEY, M. DE—Ages Cosmiques d'après la Mythologie mexicaine, 1. *Annales de Philosophie Chrétienne*, Nov., 15 pp.
- BUDGE, A.—Assyrian Incantations to Fire and Water. *Tr. Soc. Biblical Archaeology*, VI, 2.
- BOSCAWEN, W.—Notes on Assyrian Religion and Mythology. *Tr. Soc. Biblical Archaeology*, VI, 2.
- HOUGHTON, W.—Hieroglyphic or picture origin of the characters of the Assyrian Syllabary. *Tr. Soc. Biblical Archaeology*, VI, 2.
- MCCLINTOCK, LETITIA—Beasts, Birds and Insects in Irish Folk-lore. *Eclectic Mag.*, Jan., from *Belgravia*.
- COX, REV. G. W.—Homeric Mythology and Religion. A Reply to Mr. Gladstone. *Tr. Soc. Biblical Archaeology*, Dec.
- Forms of Salutations. *Eclectic Mag.*, Jan.
- MENON, P. S.—On the Coast of Madagascar. *Madras J. of Literature*, 1.
- ROGERS, E. T.—Dialects of Arabic. *J. of Roy. Asiatic Soc.*, Aug.

- VINSON, J.—Esquisse Grammaticale de la Langue de God. *Rev. Linguistique*, Oct.
- ASTON, W. G.—A Comparative study of the Javanese and Corean Languages. *J. of Roy. Asiatic Soc.*, Aug.
- Grammaire Samoane. *Rev. Linguistique*, Oct.
- OPPERT, G.—On the Ancient Commerce of India. *Madras J. of Literature*, 1.

Section I.—Preliminary Remarks. The first object of this work is to give a general view of the history of the United States, from the first discovery of the continent to the present time. The second object is to give a general view of the present state of the United States, and of the progress of civilization in this country. The third object is to give a general view of the future prospects of the United States, and of the progress of civilization in this country.



(From the *American Naturalist*, January, 1880.)

### ANTHROPOLOGY.<sup>1</sup>

ANTHROPOLOGICAL NEWS.—We are pained to hear of the death of Mrs. Rev. Stephen Bowers, wife of the eminent archæologist of Santa Barbara, California. She was devoted to her husband's labors, accompanying him in all his expeditions, and was herself an intelligent collector.

We have received from the editors of the *Journal of the Victoria Institute*, four pamphlet copies of papers from that publication bearing the following titles: The Ethnology of the Pacific, by the Rev. S. J. Whitmee; The caves of South Devon and their teaching, by J. E. Howard; The contemporaneity of man with the extinct mammalia, as taught by recent cavern exploration, and its bearing upon the question of man's antiquity, by Thomas Karr Callard; The lapse of time since the Glacial epoch, determined by the date of the polished stone age, by J. C. Southall.

Prof. George M. Dawson is the author of a pamphlet, reprinted from the *Canadian Naturalist*, entitled, Sketches of the past and present condition of the Indians of Canada. The Indian population of the Dominion is set down at 100,000.

Dr. Gustav Brühl sends to the Smithsonian Institution a pamphlet of sixteen pages, entitled, *Aztlan-Chicomoztoc, eine ethnologische Studien*. New York, Cincinnati and St. Louis, printed by Berziger Brothers.

Two very interesting brochures from the pen of Prof. Boyd Dawkins have reached us. One of them treats of the range of the mammoth in space and time, and appeared in the *Quarterly Journal of the Geological Society* for February, 1879. The other is upon our earliest ancestors in Britain, constituting No. 6 of *Science Lectures for the People*, and was delivered in Manchester, Jan. 18, 1879.

The *Journal of Anatomy and Physiology*, Vol. xiv, contains a paper, by Prof. W. H. Flower, on the scapular index as a race character in man,

<sup>1</sup>Edited by Prof. ORIS T. MASON, Columbian College, Washington, D. C.

The May number of the *Journal of the Anthropological Institute* contains the following papers: Some American illustrations of the evolution of new varieties of man, by Dr. Daniel Wilson; A revised nomenclature of the Inter-oceanic races of man, by Rev. S. J. Whitmee; Ethnological notes on the Motu, Koitapu and Koiari tribes of New Guinea, by Rev. W. G. Lawes; Notes on a skeleton found at Cissbury, April, 1878, by Prof. Geo. Rolleston; Illustrations of the mode of preserving the dead in Darnley island and in South Australia, by Prof. W. H. Flower. On page 402 is the address of the retiring president, giving an abstract of the work done during the year.

Dr. Wilson's paper in the *Journal* is devoted to a subject upon which he has bestowed a great deal of thought, the preservation of our aborigines, not by legislation but by a species of natural selection, through which a new race of men is being produced between the white race and the aborigines. The introduction of the black race and the Chinese increases the complexity of the problem and awakens some of the most curious questions in anthropology.

The communication of Mr. Whitmee is important, not only on account of his long familiarity with the Polynesian races, but also for the discussion which followed it. There are two broad and very distinct divisions of these people, the *dark* and the *brown* races; the dark occupying Australia, the Andaman islands, portions of the Indian archipelago and Western Polynesia; the brown being found in Madagascar, the Indian archipelago, Formosa, North-western and eastern Polynesia, together with New Zealand. Mr. Whitmee's division of these races is represented in the following table:

Inter-Oceanic Races of Men	{	Dark Races Negrito-Polynesian	{	Austral	Australia	
				Negrito	{ Andaman Is. Samang, etc.	
			Papuan	{ Aru Is. Western N. Guinea Western Polynesia		
		{	Brown Stock Malayo-Polynesian	{	Sawaiori	{ Samoa Hawaii N. Zealand, &c.
					Malagasy	Madagascar
	Formosan			Formosa		
	Malayan			{ Malays of Sumatra, &c. Javanese, &c.		
	Tarapon			{ Caroline Is. Marshall Is. Gilbert Is.		

Mr. Wallace, who contributes the volume on Australasia and

Polynesia to Stanford's Compendium of Geography and Travel, and Prof. Flower, objected to several of the new appellations given by Mr. Whitmee. The map illustrating this paper will be found in the February number of the *Journal*.

The seventh part of *Anales del Museo Nacional de Mexico* is entirely devoted to Archæology, and contains the following papers: Códize Mendozino: Ensayo de descripcion geroglifica, by Sr. D. Manuel Orozco y Berra; Cosmogonia Azteca, by Prof. G. Mendoza; La Piedra del Sol: segundio estudio, by Sr. D. Alfredo Chavero; El Congreso Internacional de Americanistas en Europa y el cobre entre los Aztecas, by Sr. D. Jesus Sánchez; Anales de Cuauhtitlan.

Vol. I, Part I, of the Memoirs of the Science Department, University of Tokio, Japan, is devoted to the Shell Mounds of Omori. The author, Prof. Edward S. Morse, having for years studied shell heaps in Maine and Massachusetts in company with Prof. Jeffries Wyman and Prof. F. W. Putnam, was well qualified for the examination of these remains, and has made good use of his opportunities.

These mounds possess those common characteristics which distinguish shell deposits throughout the world. They have, likewise, the following special marks: 1. The presence of enormous quantities of pottery, of many different shapes, and of an almost infinite variety of ornamentation. 2. By the great scarcity of stone implements, and the absence of arrow-heads, spear-points and other pointed implements of stone. Not an arrow-head, flake or chip has been found by the various parties that have been there in the interests of the university. 3. The men of the Omori period were also cannibals. 4. Peculiar clay tablets or amulets. The pottery is minutely described and illustrated by fifteen double lithographic plates. In form and marking it resembles in a striking manner the fragments in the Latimer collection, figured in the Smithsonian Report for 1876. The tablets are of the finest clay, light colored; two of them have designs in relief, with depressed areas; on the others the figures are cut on a flat surface. The author ventures a comparison with American tablets, but is not able to reach any definite conclusion.

The opinion of cannibalism is founded on the same evidence as is offered by Prof. Wyman, but as savages break human bones for other reasons than a design to eat the flesh, the theory must take its chances with the rest. With much diffidence we would call Prof. Morse's attention to Le Moyne's plate 15, descriptive of the Indians occupying, in 1564, the very spot where Prof. Wyman found his evidences of cannibalism. "When a battle was fought the victors seized upon the enemy and mutilated their bodies in the most brutal manner. With cane knives the arms and legs were cut around and then severed from the body by blows upon the bones from wooden cleavers. The head was also cut around

with these knives, just above the ears, and the whole scalp jerked off. These were then rapidly smoked over a fire kindled in a small round hole, and borne off in triumph towards home, together with the arms and legs, suspended upon spears." Upon arriving at home they suspended these mangled limbs and trophies and danced around them in honor of their victory. Again, in arranging the Wilkes collection for the National Museum, I was struck with the great number of spear-points made of human bones. The question occurred to me then, and has been revived by Prof. Wyman, whether any magical effect would be attributed to spear-points made of the bones of a brave enemy. The absence of pointed bone in Omori would, of course, exclude the spear-point or implement theory. In conclusion, we consider Prof. Morse's memoir one of the most important contributions to archæology for the year 1879.

Numbers 3, 4 and 5 of *Materiaux* contain the following papers of interest to general students: Les pierres a bassin et les rochers a écuelles dans la Lozère, by G. de Malafosse; A Review of Evans' Ancient Stone Implement in Great Britain; Palæo-ethnological bibliography for the year 1878, by L. Pigorini; The Tenevières of the Swiss lakes, by Dr. Forel; The latest archæological publications in the North, the Archæological Society of Finland, by E. Beauvois; Upon the origin of domestic animals, by G. De Mortilet; New anthropological publications in the German language; Study upon ring-money and its use among the Germans, by Dr. Much. The article by Dr. Forel upon the *Tenevières* of the Swiss lakes is a very important one indeed. In M. Desor's classic work upon the palafittes of Lake Neuchâtel, the author describes certain little submerged stone mounds, formed, apparently, by heaping rocks around the bases of piles. When the lakes subside, the mounds form true islets. Dr. Forel's article is to show that many of these are of geological formation, being the natural consequence of a talus forming at the foot of a bluff.

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